

## Uttarakhand : Role of Human Involvement in Climate Change

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**Abstract** :- Uttarakhand state came into existence on 9<sup>th</sup> Nov 2000. Sustaining a balance between Development and Environment was one of the biggest challenges before the policy makers. In the course of run avarice nature of mankind over-exploited the enriched natural resources thereby disturbing the precious ecosystem. Uttarakhand has typical Topography. Geographical area spread from high altitude Himalayan Tundra regions to vast plains of Terai. Out of 53483 sq Km of territory 71.03% is tropical forest land. Although state received more than 550mm of average rainfall in 2018 but community still faced acute drinking water deficit during summer and winter seasons. Adhering to unidirectional progressive approach and overlooking Environment has resulted in Climate Change (CC). Merely in past two decades temperature of Dehradun, Pithoragarh, Chamoli and Rudraprayag districts has witnessed 3-4 degree Celcius rise. Uneven rainfall in districts of Uttarkashi, Pithoragarh and Chamoli has hiked by 3%. Himalayan glaciers are drifting behind by 1.5 feet/year. Probability of frequent tremors in Himalaya and Delhi NCR is showing upward trend.

Role of human is certainly responsible for CC. Factorial causes of CC are studied. Uttarakhand's think tank has devised sectoral system to cope with CC caused by Human Involvement (HI). For redressal, Policy makers SAPCC is elaborated. International agencies, Switzerland's SDC and UNDP approved by GOI for facilitating guidance with financial linkage and monitoring the execution of SDP is mentioned. UNDP expects Uttarakhand will have Green roads, Green buildings and Carbon-Neutral environment by the end of year 2020.

**Keywords** :- Topography, Geographical region, Ecosystem, Tundra, Terai, Human Involvement, Climate Change, Aachman, Anthropogenic, Environment, Natural Disaster, Biodegradables, Green roads, Green buildings, Carbon-Neutral.

**Abbreviations** :- CC, ND, NCR, SIDCUL, BEE, ECBC, NOC, NGT, SAPCC, SDC, SDP, UNDP, GOI, NH, HI, EWS, GDP

**Introduction** :- Uttarakhand state came into existence in the year 2000 after the prolonged struggle of inhabitants. State has typical topography. Being a border state, it shares 374 Km of boundary with China. It holds status of special hilly state. Ranging from high altitude Himalayan Tundra region to vast plains of Terai spreads its topography. Out of 53483 sq Km of total geographical territory 71.03% is forest land. Temperature varies from +40 to -9 degree Celcius. Nature has blessed Uttarakhand with 17 fresh water rivers and nearly 31 lakes.

Sustaining a balance between Development and Ecosystem was one of the biggest challenge before policy makers. In the name of progress; in due course of run the avarice nature of mankind over exploited its enriched natural resources thereby disturbing precious ecosystem. Although state received 550 mm rainfall in 2018, which is more than National average rainfall but state still faced shortage of drinking and irrigation water supply in the scorching months of summer. Adhering to unidirectional progressive approach of Development and overlooking Environment, HI has thereby resulted in CC of Uttarakhand. Districts of Dehradun, Pithoragarh, Chamoli and Rudraprayag have witnessed 3-4 degree Celcius rise in temperature in merely past two decades. Uneven and unpredictable rainfall in districts of Uttarkashi, Pithoragarh and Champawat has hiked by 3%. Himalayan glaciers are drifting behind by 1.5 feet/year. Incidents of Wildfires are increasing day by day. Probability of frequent tremors in Himalayan region and Delhi NCR has risen. Balance between Development and Environment needs to be maintained for life to sustain in Uttarakhand.

As shown above, role of HI is certainly responsible for CC. Factors responsible for CC are studied. Think tank of Uttarakhand has devised a sectoral approach system for redressal of CC caused by HI. Govt of Uttarakhand has deployed International Agencies to provide guidance alongwith financial linkage and monitor the implementation of scheme. Deployed agencies have predicted that Uttarakhand will have Green roads, Green buildings and Carbon-Neutral Environment by the end of year 2020. Validation of prediction is yet to be seen.

### **Factors responsible for CC**

1. **Urbanization** :- Construction of skyscrapers, lofty buildings, commercial complexes etc is increasing day by day without proper provisions of rain harvesting system, sewage & drainage and fire fighting systems has raised issues regarding falling

ground water table, water logging, water pollution and building fires. Bureau of Energy Efficiency (BEE), evolved ECBC Code-2007 to promote energy efficient buildings. UREDA (Uttarakhand Renewable Energy Development Authority) is the Nodal agency in Uttarakhand for issuing NOC for the construction of new buildings after taking into account the ECBC (Energy Conservation Building Code) provisions.

**2. Industrialisation** :- Under the banner of SIDCUL the state is successful in inviting industries with introduction of lucrative package. Tax relaxations and cut in electricity tariff attracted entrepreneurs toward state. However, monitoring departments failed to control air pollution and discharge of industrial effluents in rivers. As a consequence first time in history it was reported in 2013 that Ganga water has ceased to be suitable for Aachman at Har Ki Pauri, Haridwar. NGT(National Green Tribunal) recently gave notice to Govt of Uttarakhand for immediate closure of eight industries in Sitarganj area for violating NGT Act 2010.

**3. Deforestation** :- Out of total geographical area Devbhumi has 71.03% as forest cover. Forests are natural shelter of wild habitats. Atmospheric Carbon dioxide is converted into Oxygen through photosynthesis. Forests are vital part of food chain and building material provider. Uttarakhand'a forests are endowed with medicinal plants. Recent trends have revealed that forest cover is depleting due to various Anthropogenic activities and ND. Uttarkashi district has lost 75 sq Km followed by Nainital district which lost 70 sq Km of forest cover. Deforestation has exacerbated Desertification.

**4. Road Connectivity** :- Uttarakhand has a feeble population of 1.17 Cr but inception of new state triggered formation of new local platforms viz: Nigams, Blocks, Nagar panchayat etc thereby arousing demand of road connectivity. At present Uttarakhand has about 3500 Km of NH network. Construction of roads in hilly terrains leave behind million & million tonnes of debris which is finally dumped into rivers. Frequent landslides is the common phenomenon at road construction sites.

**5. Modern Farming** :- HI has changed rainfall in state into uneven and unpredictable event. Farmers now rely much on pumping sets for irrigation and cattle needs thereby causing ground water table to fall further. Dependence on chemicals like; pesticides, insecticides and fertilizers for better yield of crops has increased soil salinity. Several acres of fertile agricultural land has turned into barren land in Khanpur and Bhagwanpur blocks.

6. **Energy** :- To cater the daily demand of 43 MU of electricity the state has 3400 MW of installed capacity. With the outcome of new Hydro Electric Power Projects the state now enjoys status of energy surplus. On the reverse front this anthropogenic event has given rise to deforestation, loss of flora & fauna and exodus of inhabitants. Addition of 750 MW of gas based plants in Kashipur town has further exacerbated ecological concerns.

7. **Tourism** :- Tourism is treated as industry in Uttrakhand. Its contribution in state economy is significant. However, unplanned travel tours, non inspection of vehicles and unavailability of human waste dumping yards has made tourism a menace for ecosystem. On overt side Tourism contributes in state's GDP while on covert side tourist influx leads to road congestions. Infrastructure needs huge concern.

8. **Non Biodegradables** :- Uttrakhandi's are no exception to adaptation of modern busy life style alongwith use and throw concept. State is worst in India to process solid-waste. Every day about 1500 tonne of solid-waste is generated, while processing is 0%. None of the city in Uttrakhand could find place in Swach Sarvekshan conducted by GOI. More and more use of polythene, plastics and other Non Biodegradables has disturbed ecological balance; Non Biodegradables persist in Environment for centuries to come before decomposing thus contributing towards CC in Uttrakhand. On solid-waste management side: Two solid-waste treatment plants in Dehradun and Haridwar are in pipeline. State also has small solid-waste segregators in Kicha, Nainital and Joshimath where Biodegradables are segregated and converted into organic manure.

**State Action Plan of CC** :- GOI has approved a package amounting to Rs 8800 Cr for SAPCC. Govt of Uttrakhand has designated Department of Forest as Nodal Agency for the implementation of SAPCC in two phases of three years each. Sectoral approach is adapted to work on four sectors initially which are :

1. Natural Disasters (ND)
2. Forest
3. Energy
4. Water

International agencies like Swiss, State Development Cooperation (SDC) and United Nations Development Program (UNDP) have been entrusted to facilitate guidance along with financial linkage and monitoring the execution of State

Development Program (SDP) for CC respectively. Uttrakhand now has Green road link from Kotdwar to Corbett National Park joining Garhwal & Kumaon regions. Green road is relatively a new concept for road design which integrates transportation functionality and ecological sustainability. Scheme also emphasises on Green building constructions which is an outcome of sustainable design focusing on increasing the efficiency of resources used (manpower, time, materials, water and energy) while reducing building impacts on human health and Environment during building's life cycle. Hari Green Enclave Shopping Mall & Green View Residency in Dehradun, Green Avenue Apartments & Haridwar Green Apartments in Haridwar are few updates of Green buildings in Uttrakhand.

**Conclusion** :- Role of HI in Uttrakhand's CC is exacerbating towards unpredictable & uneven rainfall, rising temperature, landslides, avalanches, depleting glaciers, floods etc, needs to be addressed. Early Warning System (EWS) is to be devised. Validation of International Agencies, Swiss SDC and UNDP prediction that state of Uttrakhand will have Green roads, Green buildings and Carbon-Neutral Environment by the end of year 2020 is yet to be seen.

#### **References :-**

1. [www.cleantech.org/principle](http://www.cleantech.org/principle): Human Affect Climate Change
2. [www.sites.nationaleacademies.org](http://www.sites.nationaleacademies.org): Human Are Causing Global Warming
3. [www.forest.uk.gov.in](http://www.forest.uk.gov.in): Climate Change: ENV- Uttrakhand Forest Department
4. [www.climate.gov](http://www.climate.gov): Teaching Essential Principles Human Activities Are Impacting Climate Change
5. [www.eea.europa.eu](http://www.eea.europa.eu): How are Human Activities Contribute To Climate Change
6. [www.succ.uk.org](http://www.succ.uk.org): Uttrakhand State Climate Change Cell
7. [www.climaterealityproject](http://www.climaterealityproject): How do we know Humans Are Causing Climate Change
8. [www.carbonbrief.org](http://www.carbonbrief.org) : Why Scientists Think 100% Of Global Warming Is Due To Humans
9. [www.timesofindia.indiatimes.com](http://www.timesofindia.indiatimes.com): Impact of Climate Change On Water Resources In Uttrakhand
10. [www.earthjournalism.net](http://www.earthjournalism.net): Climate Change Brings New Reality In Uttrakhand
11. [www.forestcleaner.nic.in](http://www.forestcleaner.nic.in): Ministry Of Forest, Environment and Climate Change , Uttrakhand.