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Sustainable development for mountain region: A study of Uttarakhand State

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INTRODUCTION

Mountains occupy 24 per cent of the global land surface area and are home to 12 per cent of the world's population. About 10 per cent of the world's population depends directly on the use of mountain resources for their livelihoods and wellbeing, and an estimated 40 per cent depends indirectly on them for water, hydroelectricity, timber, biodiversity and niche products, mineral resources, recreation, and flood control (Schild, 2008). But unfortunately mountains have received little attention in global discussions of environment oriented development debate. Although the environment friendly development debate placed centrality in 1992 with the adoption of Chapter 13 of Agenda 21 at the United Nations Conference on Environment and Development in Rio de Janeiro, Brazil (UNCED, 2010). After this conference many countries promotes the integrated planning approach for sustainable development of mountain regions with better understanding of ecology and environment in the development process. In recent past many international organizations *viz*. IPCC, ICIMOD, UNEP and world bank indicates through their researches that in coming years mountain regions will be face multitude negative impact of climate change and their inhabitants will disproportionally affected. Climate and environmental changes in mountain are clearly visualizes in terms of increasing natural disasters (landslides, flashfloods), food and energy crises, depopulation, water scarcity and desertification, loss of biodiversity, degradation of ecosystems and migration.

The region is facing the negative impact of climate induced changes and already showing some deep impacts such as longer and relatively cold winters, unexpected and premature rainfall, unusual snowfall, extreme hot summer and rapidly melting glaciers. Many glaciers in the region are thinning as a result of climate warming, and this has resulted in the formation of melt water lakes. These lakes are often held back by unstable moraine dams that could potentially breach causing serious floods and debris flows to downstream. This phenomenon caused extensive destruction in the valley downstream. Such changes in climate patterns have deep livelihood and life related repercussions. In addition to the require of hydro-meteorological data, insufficient early warning systems, and poor infrastructure planning often exacerbate the damages caused by floods in terms

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of human lives and properties as this has happened in the recent disaster in the Kedarnath areas. The recent natural disasters, causing heavy loss of lives and property in the Rudraprayag, Chamoli and Uttarkashi districts of Uttarakhand state have brought to the centre stage of harmonizing the development initiatives with eco- restoration and eco- preservation, along with the well lay out and tested disaster mitigation and management system. It may be mentioned here that though the state of Uttarakhand has witnessed unprecedented growth since its inception, the focus and the direction of development and exclusion of population in the hills from development initiatives and out comes, has created a feeling of misery and deception.

Mountains play a vital role in influencing worldwide and regional climates and weather conditions. By intercepting the global transmission of air, they have a critical outcome on wind, precipitation and temperature patterns. This mountain region is still suffers from marginality, inaccessibility and fragility which poses a severe threat on diversified and all- round development. In spite of recognizing the need for a different approach, planning for development in these areas, particularly in ecologically fragile and climatic sensitive has not yet sufficiently internalized the basic ingredients of such an approach. The specific roles and significance of the potentials and contributions of local community especially women in mountain economies are not adequately recognized in planning for socioeconomic development; and the physical, social, and cultural characteristics of mountain areas are often ignored in determining spatial units for planning in these areas. Most often these deficiencies are a result of the lack of appropriate methodologies and their inadequate use in planning and policy-making. In the light of above issues this makes a strong case for adoption of specific focused approaches for identifications of problems, development and execution of suitable planning model in a highly ecologically fragile and environmentally sensitive region like Uttarakhand.

Objectives, Visions and Plan of the Study :

Despite it's rich natural and cultural resources, the Uttarakhand Himalaya is underdeveloped. The present development pattern and environmental health suggest the existing planning interventions are unsustainable. To change the social and economic backwardness in the state it is very important to implement a developmental strategy based on long-term planning that will take steps to counter all the problems described above. Thus the objective of the study is to recognize the suitable integrated planning approach with the objectives of conserving the mountain environment, reducing the climate impact and improving the livelihood opportunities to the mountain people. The information has been collected from various secondary sources. To improve social conditions in the state it is necessary to improve indicators like health conditions, water availability, electricity, sanitation, and infrastructure like roads, markets, and telecommunications. Agricultural productivity and movement from traditional to modern farming techniques are crucial for the growth and development of the state and districts. The identified sectors for development are agriculture, poultry and wool, infrastructure, tourism and Small Manufacturing Enterprises (SMEs) based on these sectors. Section 1 of the paper discusses the issue of sustaining and developing the agriculture system. Section 2 highlights the development of small-scale industries and other opportunities to help generate employment in the hill districts. Section 3 discusses the way to spread tourism especially in the hilly areas and Section4 deals with the matter of infrastructure growth. Section 5 gives the conclusion and strategy; it also recommends measures to address critical constraints that hill regions of Uttarakhand.

Study area :

Uttarakhand State, a newly Himalayan State spread over between 28^0- 43' to 31^0-27' North latitude to 77^0 -24' to 81^0 -02' East longitude is among the ninth Himalayan state of the Indian republics with 13 districts and Dehradun as its working capital. Presently it has Two Divisions (*viz.*, Garhwal and Kumaun), 13 Districts (*viz.*, Almora, Bageshwar, Champawat, Chamoli, Dehradun, Haridwar, Nanital, Pauri, Pitoragarh, Rudrapur, Tehri, Udam Singh Nagar and Uttarkashi

Agricultural development :

The growth of agricultural sector of Uttarakhand was re-examined when the state was separated from Uttar Pradesh. The ecology of the hill region is very different from the plains, it was essential to limelight the agriculture of hill districts of Uttarakhand in a various way. The Green Revolution of the 1960s benefits those areas that previously had irrigation facilities, but this was not possible in the hilly areas of Uttarakhand due to lack of resources. Uttarakhand is chiefly agricultural state although its share in the country's total area and production is very small. The role of agriculture to the state's domestic product is about 17.6 per cent and the population dependent on agriculture sector for their living is about 52 per cent. The progress of the hills is primarily linked to the growth of agriculture and its related activities. With the state's limitations in land and water possessions, yields need to be better through technical revolution and transformation of agriculture in a diversified manner. Thus, the developmental policies for the agriculture segment of the state in particular have to be oriented towards subsidiary and small landholders. For sustainable growth, additional investment is essential. The major purpose of the development of the agriculture system is to lift up sustainability of this segment in such a mode that it provide a improved source of revenue option and makes the inhabitants dependent on it move from subsistence farming to a well-knit higher-income farming system and alternatives to the farming system in a diversified way.

Industrial development :

Uttarakhand has seen strong industrialization during the past five years, but that was mostly in the plains, following the special package announced by the Centre Govt in 2003. Thus an Industrial hill Policy 2008 was launched in February especially for the industrial development of hilly and far-flung areas in the state. This policy has aimed at the economic development of the hilly region. The government has also decided to set up 11 new industrial hubs in the state and create high- level infrastructure and the objective of comprehensive growth, the main concentration is now on the hill districts. This policy aims to speed up industrial development in the industrially backward and far-flung districts of the state. The construction of employment opportunities along with the elimination of economic backwardness is expected to help manage the migration of the population towards the plain areas and other neighbouring states in search of better livelihoods. For small-scale industries, Cottage, Khadi, Village industries, Handicrafts, Silk and Handloom sectors, it will help them in transformation and technical promotion and give essential common facilities with backward and forward linkages, together with product design and marketing facilities so as to make them worldwide competitive and remunerative. The State Infrastructure & Industrial Development Corporation of Uttarakhand Limited (SIDCUL), which is credited for heavy industrialisation in the plains, has been roped in to develop these new industrial hubs in the hills. It also provides financial help to encourage industries and develop industrial infrastructure in the state and creates many job opportunities in the state.

Tourism development :

The potentialities of tourism to diversify and contribute in the process of economic development in the study area are being realized gradually, but tourists face a lot of troubles by which the tourism commerce is not developed at par with the other regions of India like Himachal Pradesh, Maharashtra, Goa, Gujarat, and Rajasthan. In Uttarakhand, there is huge potentiality to expand the tourism industry. Tourists want to see new places which are close to nature and away from hustle and bustle of city. So the new concepts in tourism have emerged like ecotourism, new age tourism, rural tourism, health tourism, medical tourism etc. In Uttarakhand nature is not polluted at par with other states in India, so that is why there is enough potential and have a future development of tourism in this hill region. Since Uttarakhand is rich in natural beauty with a distinctive mountain environment as well as rich historical and cultural assets. The main problem in the development of the state is appropriate infrastructure to support sustainable tourism. Tourist zones have to be connected by formal and informal links in the form of roads, train tracks etc. The seasonality of different kinds of tourism and tourists to be paying attention should be taken into account, so as to generate employment for year-round tourism. The tourism plan needs to build up new tourist options that aim different types of tourists as well as showcase the culture, handicrafts, and cuisine of that tourist option. Proper publicity and marketing are required along with the development of skills in tourism sub-sectors to provide world class service. Training institutions that impart skills and partnerships with the public sector to develop the resources need to be integrated into this plan (Mittal *et al.,* 2008). There are already some master plans by the government for both the Garhwal and Kumoan regions that need to be implemented appropriately and integrate with upcoming government plans. To attain the height in the expansion of tourism in study area sustainable tourism development through integrated planning is needed.

Infrastructural development :

The major infrastructure issues are drinking water, irrigation facilities, electricity, Road and communication facilities, banking infrastructure, and social infrastructure like housing and education. For all infrastructure development projects it is important for targets to be specified.

1. The foremost health hazard faced by underdeveloped areas is the lack of safe drinking water. In rural areas, water is never filtered and chlorinated. The natural water source is used for all purposes. Hence none can escape from the infections of various types of worms. “The most common worms are the roundworm, the threadworm, the hookworm and the tape warm”. More striking is that despite this sordid condition, little has been done to improve the situation. The issue of drinking water supply must be part of an integrated water resource management plan. Lift irrigation techniques, such as hydrams and guhls can be used to improve irrigation in Uttarakhand, particularly in the hill districts.

2. Road networks should be further developed. The topography and sparse settlements are the foremost handicaps to develop transportation in the area. The rocky surface, high gradient and numerous rivers and their tributaries cause unwarranted diversion of roads, thereby increasing the length to undesired extent. The aforesaid constraints increase the cost of construction and maintenance of roads. The climatic conditions can also responsible for perpetuating inaccessibility in the area. Heavy rains and snowfall make it difficult to construct all-weather roads. Frequent landslides in rainy season cause heavy damage to roads and block the traffic, heavy snowfall makes vehicular traffic impossible on the roads passing through high altitudes.

3. The ideal approach involves large-scale community participation which makes the installation

as well as running of the micro-plant economical. Panchayati Raj institutions must play a vital role regarding control and management of water, land, forest resources and maintenance of the roads at the village level.

4. Only the State Bank of India (SBI) is providing service in the hilly regions where it is trying to achieve the purpose of 100 per cent financial inclusion in the hill area. To achieve the most important objective of financial inclusion, the RBI should be approached to compel a Universal Service Obligation on all Commercial banks that will help the faster spread of hill area banking. People in the hilly regions should be made alert that loan schemes are available, e.g., SIDBI's credit guarantee scheme. The setting up of self-help groups and micro-finance institutions as motivators and providers of micro-credit should be facilitated.

5. Particular emphasis on female education is urgently needed. For raising the standard of education system it is very important to meet the deficit in teachers and class educational institution. Thus, actions are needed like removing institutional licensing, drawing up a sketch for teacher training, raising teacher's salaries (in other words, immediately implementing the recommendations of the 7th Pay Commission), and giving additional incentives to teachers who are serving in hill regions of the state.

Conclusion and Strategy :

Uttarakhand state has an urgent need of creation of infrastructural and socio-economic development. The region is in the disadvantageous situation in terms of difficult terrain, severe weather conditions, large forest land, dispersed habitations, small and under-developed markets, poor connectivity and inadequate general infrastructure. These acts as constraints in terms of development compared to other region. The state has the inherent potentiality for agricultural development from traditional cropping to market-oriented dimensions and also has the comparative advantage in the production of many location-specific high-value crops. Promotion of off-season vegetable cultivation, horticulture, floriculture, and medicinal plants are the main alternative opportunities of diversification of agriculture. Therefore, there is an urgent need to provide skill development to farmers and to establish skill development center for the purpose. The institutional reform in land ownership like consolidation of holdings is yet to needed and operationalized seriously. The infrastructural facilities, e.g. road, electricity, banks, and communication are available, however they are not designed specifically to meet the needs of local community and they have no concern for the needs of regional development. The community of the remote villages still suffers from proper utilization of these infrastructure facilities. Therefore connectivity of villages to roads, electricity, banking facility and communication facilities should be provided in the remote locations. Strengthen weather forecasting and early warning systems and make them local community oriented. It helps in creating people awareness in climate vulnerability, minimizing the losses of disasters and mitigation in climate-related risk. A proper institutional arrangement should be created in the study area. Generating awareness amongst the local people and capacity building of Panchayati Raj Institutions are of paramount importance in conserving and optimal utilization of the natural resources in a sustainable manner. The grass root level governance agencies can utilise in disaster management rehabilitation and recovery process. India's Himalayan states are disaster prone. They must heed the lessons emerging from the 2013 Uttarakhand tragedy especially in the context of the repeated indications of climate change. Ecologically sustainable development is the basic prerequisite for disaster mitigation. Equitable development will reduce the vulnerable populations. Governments must realize that they alone cannot take adequate measures. Communities and civil society

organizations must be active partners.

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