



ЭКОЛОГИЧЕСКОЕ БОГАТСТВО ОКРУГА КИННАУР И СОВРЕМЕННЫЕ УГРОЗЫ РАЗВИТИЯ

KINNAUR'S ECOLOGICAL TROVE UNDER THE THREATS OF DEVELOPMENT

Ключевые слова: Гималаи, Химачал Прадеш, Киннаур, экология, угрозы развития, устойчивый подход к развитию, традиционные системы ценностей.

Keywords: Himalayas, Himachal Pradesh, Kinnaur, ecology, threats of development, sustainable approach to development, traditional value systems

Штат Химачал-Прадеш расположен вблизи хребтов Дхауладхар и Пир-Панжал Западных Гималаев. Штат отличается разнообразием географических характеристик, природных условий, также богатством экосистем. Киннаур – один из двенадцати округов Химачала, обладающий собственной природно-географической и социо-экологической индивидуальностью. С запада он окружен Тибетом и включает в себя три высочайших хребта: Заскар, Большие Гималаи и Дхауладхар, а также реки Сатледж, Спити и Баспу с их многочисленными притоками. Склоны гор покрыты густыми лесами, садами, полями и живописными деревнями. С приходом транснациональных фирм хрупкие экосистемы Киннаура оказались под постоянной угрозой уничтожения. Конечно, колесо прогресса не остановить, но он может быть переориентирован через принятие более прагматичных, разнообразных и устойчивых подходов в выработке приоритетов развития, которые принимали бы во внимание традиционные системы ценностей и способы хозяйствования. Пусть шаги будут медленными, но зато они послужат во благо природы и жителей Киннаура.

The state of Himachal Pradesh is located in the vicinity of Dhauladhar and Pir Panjal ranges of Western Himalayas. The State has varying physiography, climatic conditions and diverse ecosystems. Kinnaur, one of the twelve districts of Himachal represents its own physical and socio-ecological individuality. Kinnaur is surrounded by Tibet in the east and is having the three high mountains ranges namely Zaskar, Greater Himalayas and Dhauladhar, enclosing rivers Sutlej, Spiti, Baspa and their tributaries. The slopes are covered with thick wood, orchards, fields and picturesque hamlets. With the coming up of multinational firms, the friable ecosystem of Kinnaur is under impending threat. Certainly, the wheel of change cannot be overturned, but it can certainly be reoriented by adopting a pragmatic, viable and sustainable approach in formulating the developmental priorities taking into account the traditional value system and enterprises. The pace may be slow, but it will surely be beneficial to the environment and people of Kinnaur.

Самбьял, Ранжит Сингх, преподаватель экологических дисциплин, Государственная мужская старшая средняя школа, округ Джамму, штат Джамму и Кашмир, Индия. E-mail: rajasam28@yahoo.com.

Sambyal, Ranjeet Singh, lecturer (Environment Sciences), Government Boys Senior Secondary School, District Jammu, Jammu & Kashmir, India. E-mail: rajasam28@yahoo.com.

The state of Himachal Pradesh is located in the vicinity of Dhauladhar and PirPanjal ranges of Western Himalay between 32° 22' 40" to 33° 12' 40" N Latitudes and 75° 45' 55" to 79° 04' 20" E Longitudes. According to 2011 Census, the state has a geographical area of 55,673 sq. km with twelve districts, 109 tehsils & sub-tehsils and 57 urban areas with a total population of 68,64,602 people. The state has varying physiography, climatic conditions and diverse ecosystems. The variations in the climatic conditions range from lower tropical regions to cold and alpine conditions in the upper regions. Many areas in the state are snow-bound with glaciers, which act as the source of many perennial river systems in the state. Himachal Pradesh is gifted with about 23000 MW of utilizable hydro potential, excluding about 750 MW in small /mini/micro hydel potential of its five river basins. Kinnaur,

one of the twelve districts of Himachal represents its own physical and socio-ecological individuality. Nestled in the diverse geophysical conditions with Skyscraping Mountains and gushing rivers, Kinnaur is a biological hot-spot. Kinnaur is not only sustaining the civilizations but nurturing countless medicinal and aromatic plants growing naturally in its dry-temperate forests, grasslands and alpine heights. Innumerable floral and faunal species are found in the district. But, in the name of development, the power projects are spelling doom in Kinnaur. While indigenous communities and environmental activists are against these projects, the government is still in the process of initiating several projects across the district to harness the untapped hydropower potential. Indigenous people and environment of Kinnaur are suffering the consequences of unplanned development. The development is non-

quantifiable process, but its emotional and moral penalties must be considered while calculating its cost-benefit ratio. In the last few years, the social and environmental concerns related to the hydroelectric projects in the mountainous regions have caught the attention of environmentalists and social activists. These impacts are linked with the changes in the social and biological environment, which manifests in form of vegetation loss, topographical disturbances, changes in water bodies, involuntary resettlement, health problems, and transformation of cultural values.

Kinnaur, known for its valleys, the important being Sutlej valley, Bhabha valley, Tirung Valley, Baspa Valley, Taiti Valley, Spiti Valley and Ropa Valley has distinct topography and ecological conditions. Total geographical area of Kinnaur is 6401 sq. kms. With 458297.47 hectares of forest area, 9355 hectares of cultivable land and 614387 hectares of non-cultivable land. Kinnaur is surrounded by Tibet in the east and is having the three high mountains ranges namely Zaskar, Greater Himalayas and Dhauladhar, enclosing rivers Sutlej, Spiti, Baspa and their tributaries. The slopes are covered with thick wood, orchards, fields and picturesque hamlets. The religious *Shivlinga* lies at *Kinner Kailash Peak*. The old Hindustan-Tibet road passes through Kinnaur valley along the banks of river Sutlej and finally enters Tibet at *Shipki La Pass*. The district enjoys a temperate climate due to its high elevation, with long winters from October to May, and short summers from June to September. The lower parts of Sutlej Valley and Baspa valley receive monsoon rains. The upper areas of these valleys fall mainly in the rain-shadow area.

Soil in Kinnaur has sandy clayey texture and acidic. The vegetal cover is limited to the lower parts of Kinnaur, i.e. along the river valleys. There are three wild life sanctuaries in Kinnaur. These are Rupi-Bhabha wildlife sanctuary; Rakchham-Chitkul wildlife sanctuary and Lippa-Asrang wildlife sanctuary. The alpine pastures have valuable resource wealth with fertile land, which provides high-quality pasturage. The area under forest cover in Kinnaur is small and only part of it is well-protected. The area under cultivation is less with low yield, but in the recent years, the climatic conditions have favored the expansion of apple cultivation in the district. The agricultural land on steep slopes is being eroded and the ecosystem has become unstable. The main plants in the region include *Pinus longifolia*, *Pinus excels*, *Abies smithiana*, *Picea webbiana*, *Juniperus excels*, *Quercus dilatata*, *Pinus gerardiana*, *Betula utilis*, *Ephedra gerardiana*, *Viola serpens*, *Podophyllum hexandrum*, *Prunus persica*, *Prinsepia utilis*, *Rhododendron arboreum*, *Hippophae rhamnoides*, *Juniperus communis*, *Angelica glauca*, *Prunus armeniaca*,

Cedrus deodara, *Dactylorhiza hatagirea*, *Nardostachys grandiflora*, *Bunium persicum* and *Crocus sativus*. Some of them are on the verge of extinction due to overexploitation, expansion of the market culture, unwarranted livestock pressure and lack of good management practices. The developmental projects have been blamed for causing irreversible damage to the environment, natural resources, such as water and forests, as well as to increasing disasters. In June 2013, while the world witnessed the shocking Uttarakhand floods, a calamity of a similar scale lashed Kinnaur, when the district experienced extremely heavy rainfall causing floods, landslides, erosion and damage to fields, apple orchards and cattle. The regions where project roads and tunnels had been built experienced more landslides and impacts of devastation as compare to other areas.

The most prominent landslides were noticed in Pangi village, near Rekong Peo town, where the road construction for Kashang Hydro Eclectic Power Project (Stage I), led to huge landslides which got worse with rains. Hundreds of apple trees were washed away and many families were affected. The Shongtong-Karcham Hydro Eclectic Power Project which is presently under construction impacted nearby villages, like Barang and Mebar. Its tunnel was being constructed in a landslide-prone area. In 2015, a part of national highway, where the tunnel construction was going on, was blocked due to collapsing of rocks. Another site which has been affected was Urni, which is above the junction of flushing tunnel, Head Race Tunnel and Adit tunnel of Karchham Wangtoo project. In 2014, the cliff near Urni collapsed blocking the National Highway. Tunnels have been constructed using blasting which results in hydro-geological changes and disturbs the underground water aquifers. Many natural water sources have dried up and in remaining the discharge has reduced, thereby impacting the supply of drinking water in summers. Though the natural disaster of 2013 brought disappointment but it also brought hope to the indigenous communities who have started understanding the implications of development on the region. Today, the people of Kinnaur are coping with geological, ecological, socio-economic and cultural changes. Just paying substantial compensation cannot reimburse the damage inflicted on environment and socio-cultural fabric of the indigenous communities. Displacing people from their conventional habitats has severe touching psychological fall outs. How far these structures will withstand the already fragile geological strata of extremely tectonic region is a big question to be answered in future. The developmental impacts on the fragile ecosystem of Kinnaur vis-à-vis the ecological factors are listed below:

Cause	Impact
High altitude and tough terrain Erosion Loose land mass Steep slopes	Inaccessibility Limited movement and conveyance Land degeneration, ecological hazards, and disaster Decreasing farming land and limited land use
Hostile climatic condition Low temperature Reduced atmospheric pressure and high humidity	Reduced working capacity and human energy Health Loss Option for growing selective crops
Adverse soil condition Poor soils Soil loss and degradation	Weak ecological conditions Reduced farming potential
Adverse vegetation condition Dense forest cover in some area Loss of vegetation by illegal cutting.	Increased soil erosion, natural hazards, landslides, etc. Scarcity of fuel wood Change in microclimate, geo-hydrology and soil
Natural calamities Earthquakes Landslides Rock fall	Destruction of life and property Loss of life Damage to transport and communication and other Infrastructure

The project authorities are coldhearted about the demographic and social changes that the influx of labor is causing. Hence, there is a need of systematically reviewing the policy on hydropower generation. If the power generation is beneficially contributing to the economy of Kinnaur, it can be achieved by building a sustainable resource base for the cultural, moral and material upliftment of indigenous communities and safeguarding of its ecology and environment. The region has bountiful resources, which should not be exploited mercilessly but must be utilized symbiotically. With the coming up of multinational firms, the friable ecosystem of Kinnaur is under impending threat. Certainly, the wheel of change cannot be overturned, but it can certainly be reoriented by adopting a pragmatic, viable and sustainable approach in formulating the developmental priorities taking into account the traditional value system and enterprises. The pace may be slow, but it will surely be beneficial to the environment and people of Kinnaur.

In the era, when the developed countries are challenging the setting-up of power projects, especially in the tectonic areas; there is a dire need for in-depth review of policy for sustainable approach to development. Kinnaur has given up everything for the sake of development but it's the time to compensate the indigenous communities for the cultural, spiritual, material and ecological losses by starting and reassuring activities that may be favorable for sustainable cultural and ethical upliftment. There are few issues which are normally linked with the setting-up of power projects. These include:

- Loss of livelihood due to land acquisition
- Loss to standing crop
- Change in land value
- Transitory loss of access to Common Property Resources
- Impact on Socio-cultural setup

In the era of capitalization of river water for power generation, the collaborative and planned approaches

must be taken into consideration, especially in context of Kinnaur. There is a need to adopt low carbon electric power technologies and support a decentralized energy strategy through joint ventures ensuring 'public-private partnership'.

In order to maintain an ecological balance, these issues must be addressed seriously. The land acquisition affects the community life of indigenous people and from movement of vehicles, transportation of construction material disturbs their life, besides affecting the natural resources. At times the authorities don't express any concern for historic and religious sites which must be conserved from cultural and archeological point of view.

There is need of instilling positive attitude, appreciation for importance of clean air, clean water and a healthy environment. It would be good if ecological concerns are addressed and taken-up in future. This would really be very beneficial for the environment and indigenous communities of Kinnaur.

**Библиографический список
References**

1. Bajpai, S.C. (1981). *Kinnaur in the Himalayas: Mythology to Modernity*. New Delhi: Concept Publishers.
2. Balokhra J.M. (1997). *Himachal-The Wonderland*. New Delhi: H.G. Publication
3. Chandra, R. (1992). *Highlanders of North-Western Himalayas*. New Delhi: Inter-India Publications.
4. Gupta, P. (2012). Development and Change in Shokrori: A village restudy from Himachal Pradesh In *India's Changing Villages*, (Ed. B.R. Chauhan & A. Satyanarayan) New Delhi: Rawat Publications.
5. Mamgain, M.D. (1971). *District Gazetteer of Kinnaur*. Shimla: RajakiyaMudralaya.
6. Parmar, H.S. (1992). *Tribal Development in Himachal Pradesh: Policy, Programmes, and Performance*. New Delhi: Mittal Publications.
7. Rahul, R. (1970). *Himalayan Borderland*. New Delhi: Vikas Publications.