

# संगजू SANGJU

Sacred Attempt for Natural Growth and Joyful Union

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‘SANGJU’- The Newsletter is so named as the term in local dialect in Uttarakhand signifies the holy association or friendship. This is an attempt to make all concerned aware about activities and efforts contributed by various partners of Transboundary Landscape Conservation and Development Initiatives within Indian part of the Himalayan landscape. The Newsletter is scheduled to be published regularly in which happenings within the landscapes, other than activities of project partners, will get suitable place.

‘सनाजू’, जिसका उत्तराखण्ड की क्षेत्रीय भाषा में अभिप्राय ‘सहयोगी’ या ‘मित्र’ से है, भारतीय हिमालय में चयनित सीमापारीय परिदृश्यों के संरक्षण एवं विकास पहल के तहत कार्यरत सभी संस्थाओं द्वारा किये जा रहे कार्यकलापों से सभी सरोकारों को अवगत कराने का एक प्रयास है। पत्रिका का प्रकाशन निरंतर होना है, जिसमें परियोजनाओं से जुड़े सहयोगियों के अतिरिक्त, परिदृश्यों में कार्यरत अन्य संस्थाओं के कार्यकलापों को भी उचित स्थान दिया जाना है।



# SANGJU

## समन्वयक

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इस पत्रिका की सामग्री विभिन्न संस्थाओं से मिली सूचना पर आधारित है, अतः किसी भी त्रुटि या भूल हेतु गो.ब.प.रा.हि.प. संस्थान या संपादकगण जिम्मेदार नहीं होंगे, समाचारों की विस्तृत जानकारी हेतु सम्बंधित आयोजक संस्थान से संपर्क किया जा सकता है।

*Disclaimer: The information furnished in this Newsletter is based on the inputs received from various organizations, so the institute (i.e. GBPNIHE) or any member(s) of the editorial board will not be responsible for any mistake, misprint or factual error, if any. For further details about the contents, please contact the concerned organizing institute.*

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## समन्वयक की कलम से



## From Coordinator's PEN



साझेदार संगठनों की भारतीय टीम ने पिछले कई वर्षों में हिमालय में सीमा पार सहयोग की दिशा में आगे बढ़ते हुए तीन चिन्हित परिदृश्य पहलों [यानी, सुदूर पूर्वी हिमालय के लिए लैंडस्केप पहल (HI-LIFE), कंचनजंगा लैंडस्केप (KL) संरक्षण और विकास पहल (KLCDDI), और कैलाश पवित्र लैंडस्केप (KSL) संरक्षण और विकास पहल (KSLCDDI)] में महत्वपूर्ण योगदान दिया है। हालाँकि, इस समग्र अवधारणा में अंतर्निहित दर्शन को देखते हुए, हमें अभी भी लंबा चलना है। इस यात्रा में आने वाली चुनौतियों का सामना करने के लिए परियोजना दल अच्छी तरह से तैयार हैं। एक दूसरे से प्रभावी सीख और पूरे परिदृश्य में अनुभवों को साझा करना सफलता की कुंजी बनने जा रहा है। इसलिए, इस प्रक्रिया को सुनिश्चित करने के लिए उपाय किए जाने की आवश्यकता है। इन कार्यक्रमों के माध्यम से कई गतिविधियाँ संचालित की जाती हैं जैसे कि इकोटूरिज्म, होमस्टे डेवलपमेंट, याक संरक्षण, प्राकृतिक संसाधनों का संरक्षण, औषधीय पौधों में सुधार, प्रशिक्षण और जागरूकता कार्यक्रम, स्थानीय फसल की खेती में सुधार आदि। यह स्थानीय जैव विविधता के साथ-साथ इस परिदृश्य में रहने वाले स्वदेशी लोगों की सामाजिक-आर्थिक स्थिति को बढ़ाता है इसलिए, विविध दृष्टिकोण और उपकरण, प्रोग्रामर की संचार रणनीति का हिस्सा बन सकते हैं। व्यापक संचार रणनीति के हिस्से के रूप में, इन सभी लैंडस्केप कार्यक्रमों की भारतीय टीम अपने न्यूजलेटर 'संगजू' के माध्यम से नियमित रूप से सूचना का प्रसार कर रही हैं। विभिन्न हितधारकों को उनकी प्रगति के बारे में अच्छी तरह से सूचित रखने में यह समाचार पत्र बेहद फायदेमंद साबित हुआ है। 'संगजू' की इस क्षमता को महसूस करते हुए, भारतीय हिमालयी क्षेत्र में ट्रांसबाउंड्री लैंडस्केप्स पर राष्ट्रीय समन्वय समिति ने तीनों परिदृश्यों को कवर करने के दायरे के विस्तार के प्रस्ताव पर सहमति व्यक्त की है। 'संगजू' के दायरे में यह विस्तार निम्नलिखित का अवसर प्रदान करता है: (i) पूरे क्षेत्र के पाठकों/हितधारकों को तीनों पहलों की प्रगति के बारे में सूचित करना, और (ii) अधिक समन्वित तरीके से इन पहलों की घटनाओं पर प्रतिबिंबित करना। यह अन्य एजेंसियों द्वारा इस क्षेत्र में किए जा रहे इसी तरह के अन्य प्रयासों के लिए सूचना प्रवाह के एक वाहन के रूप में भी काम करेगा। मुझे विश्वास है कि हितधारकों को 'संगजू' का यह एकीकृत अंक अधिक रोचक लगेगा। संपादकीय टीम ने जानकारी एकत्र करने और उसे प्रभावी ढंग से प्रस्तुत करने का अच्छा काम किया है। फिर भी, हमेशा सुधार की गुंजाइश रहती है। इसलिए, मैं दर्शकों से सामग्री के बारे में सोचने और भविष्य में सुधार के लिए इस मुद्दे पर आगे बढ़ने का आग्रह करूंगा।

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The Indian team of partner organizations has made significant contributions to three identified landscape initiatives [i.e., Landscape Initiative for Far Eastern Himalayas (HI-LIFE), Kangchenjunga Landscape (KL) Conservation and Development Initiative (KLCDDI), and Kailash Sacred Landscape (KSL) Conservation and Development Initiative (KSLCDDI)] [i.e., Landscape Initiative for Far Eastern Himalayas (HI-LIFE), Kangchenjunga Landscape (KL) Conservation and Development Initiative (KLCDDI), and Kailash Sacred Landscape (KSL) Conservation and Development Initiative (KSLCDDI)], as they move towards cross-border cooperation in the Himalayas in past several years. However, considering the underlying philosophy embedded in this holistic concept, we still have to walk long. The project teams are well prepared to face the challenges that comes on this journey. Effective learning from each other and sharing experiences across the landscape is going to be the key to success. Therefore, measures need to be taken to ensure this process. Through these programs a number of activities are carried out such as ecotourism, homestay development, yak conservation, conservation of natural resources, improvement of medicinal plants, training and awareness programs, improvement of local crop cultivation, etc. It enhances the local biodiversity as well as the socio-economic status of the indigenous peoples living in this landscape. Therefore, diverse approaches and tools can become part of programmer's communication strategy. As part of broad communication strategy, Indian teams of all these landscape programmes are regularly disseminating information through its newsletter 'Sangju'. This newsletter has proved extremely beneficial in keeping the diverse stakeholders well informed on their progression. Realizing this potential of 'Sangju', the National Coordination Committee on Transboundary Landscapes in Indian Himalayan region has agreed to the proposal of expanding the scope to cover all three landscapes. This expansion in scope of 'Sangju' provides opportunity to: (i) keep readers/stakeholders across region informed on progression of all three initiatives, and (ii) reflect on happenings of these initiatives in a more coordinated manner. This will also serve as a vehicle of information flow for other similar efforts being taken up in the region by other agencies. I am sure that the stakeholders will find this integrated issue of 'Sangju' more interesting. The editorial team has done a good job of gathering information and presenting it effectively. Nevertheless, there is always room for improvement. So, I would urge the audience to think about the content and move on to this issue for future improvement.

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## STRENGTHENING TRANSBOUNDARY LANDSCAPE INITIATIVES

## Kailash Sacred Landscape

Strengthened database of KSLCDI-Phase II (October 2021 to December 2022)

KSLCDI-चरण II (अक्टूबर 2021 से दिसंबर 2022) के डेटाबेस को मजबूत किया

जीवों, उच्च पौधों के समूहों, निचले पौधों के समूहों और आक्रामक विदेशी पौधों का एक डेटाबेस तैयार किया गया है, जिसमें प्रजातियों की खतरे की स्थिति शामिल है, जिन्हें संरक्षण हस्तक्षेप की आवश्यकता है। इसके अलावा, रेंजलैंड प्रबंधन रणनीतियों को भी प्रलेखित किया गया था। लैंडस्केप में पर्यटन को बढ़ावा देने के लिए केएसएल-इंडिया में होमस्टे पर एक दस्तावेज भी तैयार किया गया था। परियोजना ने लैंगिक असमानता के मुद्दे को भी संबोधित करने के लिए अत्यंत सावधानी बरती है। 'कुंचा' अभ्यास के प्रलेखन के लिए, दो परामर्शदात्री बैठकें आयोजित की गईं।

A database of faunal groups (insects, arachnids, birds, mammals, reptiles, etc.), higher plant groups (angiosperms and gymnosperms), lower plant groups (lichen diversity), and invasive alien plants have been prepared. The threat status of species has also been included in the database to identify the critical species that need conservation efforts. In addition, the document on rangeland management includes strategies to manage the rangelands, ensure biodiversity conservation and habitat management activities in the region were also undertaken.

Towards the promotion of tourism in the landscape, a document on home stays in KSL-India was also prepared. There are 580 homestays registered in the KSL-India. The maximum number of homestays are in the high-altitude region of the *Dharchula* and *Munsyari* developmental blocks. Promotion and up-gradation of these homestays in the area would aid in livelihood generation for the inhabitants of the region, and promotion of ecotourism activities in the region would also ensure sustainable mountain tourism in the landscape. Likewise, the documentation of '*Kuncha*' an important heritage component of *Rung* cultural landscape was done, which highlighted the uniqueness of *Rung* community. This turned out to be a subject of great curiosity and interest for the people seeking knowledge and thrill. The

practice of '*Kuncha*', which with time and road construction in the region has shown a decline, could be clubbed with homestay tourism as an adventure activity so that the cultural practice could continue and the tourists could get closer to the cultural heritage of *Rung* community.

The project has taken utmost care to address the issue of gender inequality by ensuring adequate participation of women and marginalized in the consultative meets for better planning and informed decision-making. For documentation of '*Kuncha*' practice, 02 consultative meets were organized in *Ghatibagad*, and *Jauljibi*, where 60 participants took part, of which 22 women were part of the discussion.





## Landscape Initiative for Far Eastern Himalayas

**Set-up of governance/benefit sharing mechanisms to develop eco-tourism in HILIFE India**  
**HILIFE इंडिया में इको-टूरिज्म को विकसित करने के लिए गवर्नेंस / बेनिफिट शेयरिंग मैकेनिज्म की स्थापना**

HI-LIFE टीम द्वारा एकीकृत इको-टूरिज्म मॉडल को प्रवर्तित किया गया। इको-टूरिज्म को बढ़ावा देने के लिए, सभी सामानों के साथ रिवर राफ्टिंग बोट (2 नग) और एंगलिंग रॉड (2 नग) का वितरण 15 दिसंबर 2021 को नमदाफा राष्ट्रीय उद्यान, अरुणाचल प्रदेश के पास एम'पेन II गांव में एक नवनिर्मित स्वयं सहायता समूह किया गया।

The HI-LIFE programme in India is working toward promoting Integrated Eco-tourism Model in the tourism sector in selected villages lying near the periphery of Namdapha National Park/Tiger Reserve, Changlang district of Eastern Arunachal Pradesh. It is also working towards protecting and conserving keystone species within the park and adjoining PAs; through transboundary cooperation and collaboration to achieve its twin objective, i.e., biodiversity conservation and sustainable development.

For the promotion of ecotourism in and around Namdapha National Park and livelihood upliftment of communities residing near the buffer zone areas; the

distribution of River Rafting Boats (2 nos.) and Angling rods (2 nos.) with all accessories was done on 15<sup>th</sup> December 2021 at M'Pen II (8<sup>th</sup> mile) village. The equipments were handed over to the selected beneficiaries of two SHGs formed after discussion with the Panchayat members. Mrs. K. Yakang (TIO of Miao circle) and Mr. Phupla Singpho (Local Tour Operator) were the invited guests for the occasion. They appreciated the effort and initiative taken by both ICIMOD and GBPNIHE, NERC members toward ecotourism development, which is a promising aspect in the near future. A total of 20 participants (Male=14, Female=6) attended the meeting.



Distribution of eco-tourism related equipments to beneficiaries



## Strengthening of home-stays and other facilities in the HI-LIFE India area for eco-tourism promotion

इको-टूरिज्म को बढ़ावा देने के लिए HI-LIFE इंडिया क्षेत्र में होम-स्टे और अन्य सुविधाओं को मजबूत करना

इको-टूरिज्म को बढ़ावा देने के लिए HI-LIFE टीम द्वारा M'Pen II के पास नोआ-दिहिंग नदी के तट पर दो कुटिया बनाई गईं, जहाँ पर्यटक नमदाफा राष्ट्रीय उद्यान के पास चयनित स्थलों की प्राकृतिक सुंदरता का आनंद लेते हैं। पार्क से सटे दो चयनित गांवों में पूर्व-निर्मित होमस्टे को लोकप्रिय बनाने के लिए फ्रेमयुक्त साइनबोर्ड भी लगाया गया है।

The aesthetic value of a region can affect the attitude of tourists toward the destination and their experience of a particular place. A positive ambience would result in an inflow of tourists/visitors in the area, which would help towards sustainable ecotourism development. As such, two huts were constructed near the Noa-Dihing riverside near M'Pen II (9<sup>th</sup> mile) for tourists to enjoy the

natural scenic beauty of the selected site. Framed signboards were set up for popularizing homestays constructed in two selected villages, i.e., M'Pen II -8th-mile village (2 nos.) and Lama Village (3 nos.). This would help highlight the home-stays for tourists and visitors to stay and know about the homestay facility in the area.



Development of structures towards ecotourism promotion



## Resource Mapping exercise through PRA tools

पी. आर. ए टूल्स के माध्यम से संसाधन मानचित्रण अभ्यास

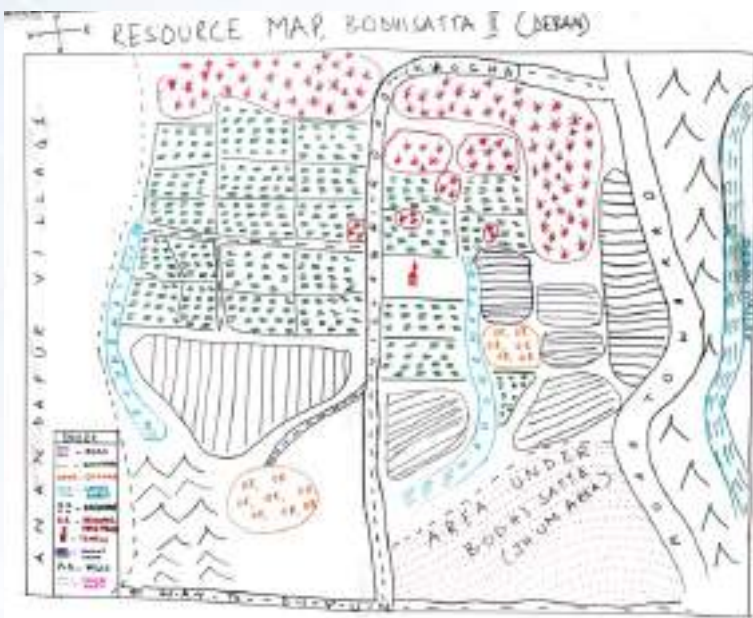
भारतीय HI-LIFE क्षेत्र के छह चयनित गांवों में छह दिवसीय प्रशिक्षण कार्यक्रम आयोजित किया गया। इस आयोजन का उद्देश्य ग्रामीणों को यह समझने में मदद करना है कि उनके गाँव के क्षेत्र में कौन से प्राकृतिक संसाधन उपलब्ध हैं और इसका उपयोग उनके लाभ के लिए कैसे किया जा सकता है।

Resource mapping is one of the most commonly used PRA methods after social mapping. It mainly focuses on the natural resources in the locality and depicts lands, hills, rivers, fields, vegetation etc. A resource map is generally drawn by the local people, as they are considered to have an in-depth knowledge of their surroundings. It reflects a person's perception and view of their locality in terms of natural resources. A six-day training programme (31<sup>st</sup> October to 5<sup>th</sup> November 2021) was conducted in six selected villages, viz. M'Pen II (7<sup>th</sup>, 8<sup>th</sup> and 9<sup>th</sup> mile), Lama, Bodhisatta I, and Bodhisatta II. The purpose of the event was to help the villagers understand what natural resources are found in their village areas and how to use them for their benefit. Mr. Manrose Talukdar from NERCOMP, Kharchang circle of Changlang district, was the resource person for the event. They were explained how it could help them gain a better insight into one's agricultural

development/growth, crop type, productivity, etc. They were told how these maps could effectively make communities aware of their resource availability.

After thorough information provided to them, they were made to draw resource maps of their respective villages. It was recorded that villagers from all six villages, though engaged in agricultural cultivation, were slowly shifting towards Areca nut (*Areca catechu*). The reason was due to minimum care and management, longevity and beneficial returns in the long run. Moreover, due to poor grain storage facility in the village, the excess product gets damage most of the time. Every household was observed to have home gardens where seasonal vegetables were grown for self-consumption and sale in the local market area (Miao town). A total of 43 villagers (Male=37, Female=6) were involved in the programme [Fig.7 (a-f)].





Training programme on Resource mapping in six villages



## EVENTS AND ACTIVITIES

### Kailash Sacred Landscape

#### Awareness workshops for promoting restoration programmes on degraded lands and livelihood opportunities

निम्नीकृत भूमि और आजीविका के अवसरों पर पुर्नस्थापना कार्यक्रमों को बढ़ावा देने के लिए जागरूकता कार्यशालाएं

पिथौरागढ़ जिले के तीन प्रायोगिक स्थलों हाट-कालिका वाटरशेड, चंडक-औनलघाट वाटरशेड, और लोअर गोरी वैली वाटरशेड में 2021 के दौरान पांच जागरूकता कार्यशालाओं का आयोजन किया गया, ताकि पुर्नस्थापना को बढ़ावा दिया जा सके।

To promote restoration programmes in 3 pilot sites (i.e., Haat-Kalika watershed, Chandak-Aunlaghat watershed and Lower Gori valley watershed) of Pithoragarh district, five awareness workshops were organized in 2021. A total of 127 Villagers (65 Male, 62 Females) from nine villages of all the pilot sites have participated in these workshops. Experts from the GBP-NIHE informed about the aim, objectives and benefits of the restoration programme on degraded lands. Experts suggested that local peoples' participation in every step of restoration interventions is the most important thing for a successful restoration programme and highlighted the importance and threats to biodiversity, including habitat loss, over-exploration, deforestation, pollution, and climate change. It was suggested that restoration is likely to reverse the loss of biodiversity, improve

ecosystem resilience, enhance the provision of ecosystem services, mitigate the effects of climate change, combat desertification and land degradation and improve human well-being while reducing environmental risks and scarcities.



#### Block-level workshops on "Synergy building with line agencies for promoting restoration programmes"

"पुनर्स्थापन कार्यक्रमों को बढ़ावा देने के लिए लाइन एजेंसियों के साथ तालमेल निर्माण" पर ब्लॉक-स्तरीय कार्यशालाएं

KSLCDI के हाट-कालिका वाटरशेड, चंडक-औनलघाट वाटरशेड और लोअर गोरी वैली वाटरशेड में पुर्नस्थापना कार्यक्रमों को बढ़ावा देने के लिए लाइन एजेंसियों के साथ तालमेल बनाने के लिए चार ब्लॉक-स्तरीय कार्यशालाओं का आयोजन किया गया। कार्यशाला में 38 गांवों के प्रतिभागियों और वन विभाग, बागवानी विभाग, पशु चिकित्सा विभाग, कृषि विभाग, गैर सरकारी संगठनों के प्रतिनिधियों और ब्लॉक अधिकारियों के अधिकारियों ने पर्याप्त जानकारी प्रदान की है।

Four block-level workshops were organized on "Synergy building with line agencies for promoting restoration programmes in Haat-Kalika watershed (2

No), Chandak-Aunlaghat watershed (1 No) and Lower Gori Valley watershed (1 No). A total of 216 participants (164 Male and 52 Female) from 38 villages and officials

of various line agencies i.e., Forest department, Horticulture department, Veterinary department, Agriculture department, representatives of NGOs, and Block officials (MGNREGA and other schemes) have participated in these workshops. At the outset of the programme, representatives of the GBP-NIHE informed us about the workshop's aim, objectives, and benefits. Experts suggested that synergy building between villagers/village representatives and respective line agencies is important for a successful restoration program. Participation and responsibility of every one should be clearly decided. One technical session was organized on "Development of strategies for convergence with line departments for Promoting Restoration Programmes on Degraded Lands and Livelihood Opportunities". For this, all the participants from the line agencies and representatives of the Gram/Van Panchayat were grouped and discussed the community's needs, different government policies currently running in the landscape, and synergy building between community and line agencies for successful restoration interventions. Some of these suggestions came from the group discussion, such as (i) medicinal plants of economic value and high market demand should be planted nearby barren land of villages, (ii) soil analysis of farmer's field can be done from soil analysis lab of agriculture department of block or district in free of cost, (iii) Chal-Khal and Khanti should be constructed in the peaks of the hilly region, (iv) fruits plants should be planted in the forests for monkeys and wild animals, (v) fencing of the plantation



site, Pit digging and plantation activity could be done through MGNREGA scheme with the help of job cardholders of the villages, (vi) restoration model should be done for mixed-species forests instead of mono-culture forests, and (vii) Special encouragement should be given to the villagers of the hilly region for connecting them to the conservation of the forests.

## Celebration of Uttarakhand's LokParv, HARELA

उत्तराखंड के लोकपर्व, हरेला का उत्सव

लोकपर्व, हरेला पर्व के अवसर पर 120 ग्रामीणों के बीच *Cinnamomum tamala* (तेजपत्ता) के 5000 पौधे वितरित किए गए।  
10.5 हेक्टेयर सामान्य बंजर भूमि में 10 औषधीय पौधों के 8,900 पौधे भी लगाए गए।

For the celebration of Uttarakhand's *lokparv*, HARELA, 5000 seedlings of *Cinnamomum tamala* were distributed among 120 villagers (65 male and 55 female) of 5 villages (i.e., Lumti, Baram, Toli, Maitali and Kalika) through convergence between GBP-NIHE and *Jila Bhesaj Sangh*, Pithoragarh. The villagers planted the species in their 5 hectares of private and community land. Along with this, plantation activity was organized through local





peoples' participation in Lumti, Naikina and Digtolisites. A total of 8,900 individuals of 10 medicinal plants (*Cinnamomum tamala*, *Pittosporum eriocarpum*, *Terminalia chebula*, *Terminalia bellirica*, *Myrica esculenta*, *Phyllanthus emblica*, *Diploknema butyracea*, *Rubus ellipticus*, *Hedychium spicatum* and *Zanthoxylum armatum*) species were planted in 10.5 hectares of common degraded land.



## Hands-on training on plantation technique and nursery preparation and management

वृक्षारोपण तकनीक और नर्सरी तैयारी और प्रबंधन पर व्यावहारिक प्रशिक्षण

चंडक-औंलाघाट जलसंभर के दो गांवों और निचली गोरी घाटी जलसंभर, पिथौरागढ़, उत्तराखंड के एक गांव में वृक्षारोपण तकनीक और नर्सरी तैयार करने पर तीन व्यावहारिक प्रशिक्षण कार्यशालाएं आयोजित की गईं। कुल 105 ग्रामीण इस प्रशिक्षण कार्यक्रमों के लाभार्थी थे।

Three hands-on training workshops on plantation technique and nursery preparation were organized in two villages of Chandak-Aunlaghat watershed (Naikina and Digtoli) and one village in the Lower Gori Valley watershed (Lumti), Pithoragarh, Uttarakhand, from 7<sup>th</sup> August to 12<sup>th</sup> August, 2021. A total of 105 villagers (77 Male and 28 Female) have participated

in the training programme. Two parallel technical sessions were organized for this training programme. The first technical training session was focused on nursery preparation and management i.e., design and layout of the nursery, nursery bed preparation, equipment and machinery, soil preparation, species selection, preparation of the potting mixture, composting, seed collection, storage and sowing, weeding and pesticides and other nursery management practices. The second technical session was focused on plantation techniques i.e., soil sampling, plant species selection, field preparation, pit digging, fertilizer application, plantation technique and plant growth monitoring.



## Khangchendzonga Landscape

### Regional workshop-cum-stakeholders meet on mainstreaming landscape approaches for conservation and sustainable livelihood - sharing of lessons and wise practices from Khangchendzonga landscape, India

संरक्षण एवं सतत् आजीविका से संबंधित समावेशी लैंडस्केप दृष्टिकोण पर क्षेत्रीय कार्यशाला एवं स्टेकहोल्डर की बैठक जिसमें कंचनजंगा परिदृश्य भारत के मुख्य आकर्षण एवं सरल अभ्यासों के अंश।

कंचनजंगा परिदृश्य संरक्षण कार्यक्रम के चरण- I की प्रगति, उपलब्धियों और सीखने को साझा करने के लिए और चरण- II कार्यक्रम के कार्यान्वयन के लिए, दो दिवसीय क्षेत्रीय कार्यशाला-सह-स्टेकहोल्डर की बैठक "संरक्षण और सतत आजीविका के लिए लैंडस्केप दृष्टिकोण को मुख्यधारा में लाना - सिक्किम में 'कंचनजंगा लैंडस्केप, भारत' से सीखें और ज्ञानपूर्ण अभ्यासों को साझा करने का आयोजन किया गया।

The Khangchendzonga Landscape Conservation and Development Initiative (KLCDI)-India programme is in its final year of the first five-year Implementation phase (i.e., 2016-2021) therefore it is necessary to share the progression, achievements, and learning of the phase-I with the relevant stakeholders and to discuss the future opportunities in the Khangchendzonga Landscape (KL)-India for implementation Phase-II. Considering this in view, two days Regional Workshop-cum-Stakeholders Meet on "Mainstreaming Landscape Approaches for Conservation and Sustainable Livelihood - Sharing of Lessons and Wise Practices from Khangchendzonga Landscape, India" was organized in Sikkim during 9-10 December 2021. The event was organized under the aegis of "Azadi Ka Amrut Mahotsava" and part of the "International Mountain Day-2021" celebration. The event's main aim was to share the achievements of KLCDI- India implementation Phase-I and identify the gaps and priorities for Phase-II of the programme through

stakeholder consultation. The outcome of Phase-I was encouraging and needed to be widely disseminated so that people at large develop an appreciation for the landscape approach for ensuring the conservation and sustainable livelihood in the Himalayan region. Likewise, R&D activities and outcomes of GBPHNIHE, especially its Sikkim Regional Centre, were also displayed and shared for the benefit of wider stakeholder constituencies. The target group for the event



Chief guest Shri S C Gupta, Chief Secretary, Government of Sikkim during inauguration session



involved stakeholders from Research Institutes, Universities, Academia, Government Departments, relevant Non-Government Organizations (NGOs), Farmers/community representatives, and beneficiaries of the KLCDI-India, Policy Planners and experts from KL and the Indian Himalayan Region.

In the inauguration session on 9<sup>th</sup> December 2021, Shri S C Gupta, **Chief Secretary, Government of Sikkim**, was the chief guest, and Shri M L Srivastava, Additional Chief Secretary-cum-

PCCF, Sikkim, were the guest of honour. At the end of the inaugural session, various documents related to KLCDI-India viz. SANGJU, LEPCHA: the indigenous people of KL, Success stories of the KLCDI-India, proceedings etc., were released by the chief guest. The inaugural session was followed by two technical sessions i) Sharing the achievements, lessons and wise practices of conservation and sustainable livelihood from KL-India, and ii) Identifying front-running environmental and developmental priorities for implementation phase-II of KLCDI.

## Exhibition on good practices for conservation and sustainable livelihood

### संरक्षण और सतत आजीविका के लिए अच्छी प्रथाओं पर प्रदर्शनी

केएलसीडीआई-इंडिया के तहत ज्ञान उत्पादों, मूल्य संवर्धन और सफलता की कहानियों को प्रदर्शित करते हुए संरक्षण और स्थायी आजीविका के लिए अच्छी प्रथाओं पर एक प्रदर्शनी का आयोजन किया गया। सिक्किम राज्य के कई संबंधित हितधारकों ने प्रदर्शनी में भाग लिया। सभी प्रतिभागियों ने पहल की सराहना की और बांस आधारित पानी की बोतलें, याक दूध आधारित उत्पाद और बिछुआ संयंत्र फाइबर आधारित उत्पादों सहित विशिष्ट उत्पादों को प्रदर्शित किया।

On 10<sup>th</sup> December 2021, an exhibition on good practices for conservation and sustainable livelihood - showcasing knowledge products, value addition and success stories under KLCDI-India was organized at MG Marg, Gangtok. Minister of Agriculture, Horticulture, Animal Husbandry and Veterinary Services Department, Shri Lok Nath Sharma, inaugurated the exhibition in presence of MLA, Gangtok constituency Shri Y.T Lepcha and officials. KLCDI-India partner exhibitors from Khangchendzonga Conservation Committee - KCC, Yuksom (Towards Zero Waste), Sewalung Nursery Yuksom (Medical plants and herbal healing), Amu Sakchum SHG from Noon, Upper Dzongu (nettle fibre-based product), Dzongu Arts and Craft Production Marketing Cooperative Society (bamboo crafts), Animal Husbandry Department (Yak based product), Proprietor from Lingdem (bamboo crafts), Mutanchi Lom Aal Shezum, Regional Ayurveda Research Institute, Botanical Survey of India, have participated in

the exhibition. Minister Shri Sharma visited the stalls, interacted with the exhibitors, and appreciated their creative and value-added products. Later, while interacting with the media, Minister Shri Sharma urged central governmental institutes like GBPNRIHE, ICAR, Regional Ayurveda Research Institute, Botanical Survey of India and all concerned to conduct comprehensive research work to revive the cultivation of various crops and vegetation for the welfare of the farmers in the state of Sikkim. He congratulated GB Pant National Institute for the initiative and farmers and exhibitors for their active participation. The public appreciated the initiative, and niche products (such as bamboo-based water bottles, yak milk-based products and nettle plant fibre-based products) were in huge demand. Besides, we were able to convey the message of solid waste management and organic farming and showcased regional research in local language books, technical manuals, success stories, and flyers.



Minister of Agriculture, Horticulture, Animal Husbandry and Veterinary Services Department, Shri Lok Nath Sharma inaugurated the exhibition in presence of MLA, Gangtok constituency Shri Y.T Lepcha and officials.



## Alternate support to the community in the *Bandapani* pilot site

### बांदापानी पायलट साइट के ग्रामीण समुदाय के लिए वैकल्पिक सहयोग

क्षेत्र की प्रासंगिक, अवसरों और खतरों को समझने के लिए केएलसीडीआई-इंडिया के बांदापानी पायलट साइट में वर्षों से सामुदायिक परामर्श की एक श्रृंखला आयोजित की गई थी। परामर्श बैठक में कई स्थानीय संभावनाओं की पहचान की गई, जिसमें व्यवहार्य विकल्प के रूप में उभरी। इसलिए केएलसीडीआई-इंडिया टीम ने क्षेत्र के 20 संभावित लाभार्थियों को 500 चूजों और पोल्ट्री फीड का वितरण किया गया साथ ही उनके रख रखाव एवं अविरक्त आय आर्जन करने के प्रक्रियों के बारे में अवगत कराया गया।

A series of community consultations were conducted over the years in the Bandapani pilot site of KLCDI-India to understand the strength, opportunities, and threats in the area. In response to this, various issues and opportunities were identified. Human elephant conflict, water scarcity, dolomite siltation and limited livelihood opportunity were among the pertinent issues. However, habitat enrichment through plantation in the elephant corridors, establishment of community mushroom centre, skill, and capacity building in ecotourism etc., were identified as some developmental and livelihood opportunities. In addition to this, poultry farming emerged as the most viable option, according to the responses received in community consultations. Considering the above, a meeting with community representatives (*Jilapanchayat* and *pradhan*) and forest officials of *Bandapani* area was organized for the identification of beneficiaries. Among the interested community people, in the initial phase, 20 potential beneficiaries belonging to below poverty line (BPL) category were identified as per the recommendations of community representatives. Initially, 500 chicks (Kuroiler) were distributed to the

identified beneficiaries in the presence of forest officials, village Pradhan. Alongside a startup, poultry feed (20 kg) to each beneficiary was also provided, and it was agreed that best performing beneficiaries will be supported further towards developing a participatory process-based poultry farm. Wherein, a brief training on caring the chicks and their proper growth for generating better income was performed.



Distribution of Kuroiler chicks as an alternative support to the community in the *Bandapani* pilot site

## Training cum demonstration on *Satwa* propagation and conservation

### सतवा प्रचार और संरक्षण पर प्रशिक्षण सह प्रदर्शन

जीबीपीएनआईआई के केएलसीडीआई-इंडिया कार्यक्रम ने उच्च मूल्य वाली औषधीय सतवा प्रजातियों के संरक्षण के प्रयासों की शुरुआत की, जिसमें देखा गया है कि जोंगू (जैव विविधता से भरपूर क्षेत्र) के प्राकृतिक क्षेत्रों में सतवा की आबादी में भारी कमी आई है। सेवालुंग नर्सरी युक्साम, पश्चिमी सिक्किम के सहयोग से सहभागी आधारित सतवा नर्सरी तैयार की गई। दो वर्षों के बाद, प्राकृतिक आवासों में बहाली के लिए स्थानीय समुदाय को 2,000 से अधिक पौधे वितरित किए गए। केएलसीडीआई-इंडिया कार्यक्रम के प्रतिनिधियों ने सतवा की प्रभावी खेती और प्रसार के लिए कृषि तकनीकों का भी प्रदर्शन

Dzongu is a biodiversity-rich area located in the North Sikkim district of the state of Sikkim. It is one of the three identified pilot sites of the Khangchendzonga Landscape Conservation and Development Initiative (KLCDI)-India. During the preparatory and intermediary phase of KLCDI-India, conservation & development strategy and participatory-based bioresource management plan were prepared for *Dzongu* pilot site. As an outcome, the *Dzongu* was identified as a natural habitat of *Paris polyphylla* (*Satwa*) where the natural populations of *Satwa* were declining. *Satwa* is a high-value medicinal plant used in various traditional healing systems. It prefers moist habitat along 1800-3500m asl. However, during recent community consultations, forest resource mapping and people's biodiversity register (PBR) preparations in *Dzongu*, it was documented that

the species is almost vanished from its natural habitat. Most people perceived that *Dzongu Bata Satwa Herayo* (i.e., there is no more *Satwa* plants in *Dzongu*). It was kept in view that this high-value species requires an immediate conservation effort to restore its natural populations; the G.B. Pant National Institute of Himalayan Environment (NIHE), under the KLCDI-India programme, initiated conservation efforts for *Satwa*. A participatory based *Satwa* nursery was prepared in collaboration with *Sewalung Nursery Yuksam*, west Sikkim. After two years of growth in the nursery, more than 2,000 plants (seedlings) were distributed to the local community for restoration in natural habitats ensuring people's participation and awareness towards the conservation of *Satwa*. Prior to seedling distribution, a training cum demonstration programme was organized for

community representatives of *Dzongu* on 29<sup>th</sup> July 2021 at Sikkim Regional Centre. During the training, participants were demonstrated agro techniques for effective cultivation and propagation of *Satwa*, it's monitoring and further multiplication. The event provided an opportunity to deliberate on strengthening linkages between farmers engaged in medicinal plant conservation and working experts/ scientists in the field of biodiversity conservation.



Participants from Dzongu and Pangthang getting training on *Satwa* conservation and propagation



## Online strategic meet-cum-Brainstorming on strengthening Yak and Siri based Networks in Khangchendzonga Landscape

ऑनलाइन समारिक बुद्धिशीलता-सह-कंचनजंगा परिटृश्य में याक और सीरी आधारित नेटवर्क को मजबूत करने पर मंथन

याक और सीरी के उत्पाद मूल्य श्रृंखला को बेहतर बनाने और प्रोत्साहित करने और सुव्यवस्थित करने के लिए कंचनजंगा परिटृश्य में याक और सीरी-आधारित नेटवर्क को मजबूत करने पर सामरिक बैठक सह विचार-मंथन का आयोजन किया गया था।

The Khangchendzonga Landscape lies in the eastern Himalayas and is a part of the biodiversity hotspot. Covering an area of 25,080.80 km<sup>2</sup>, it is spread across the states of West Bengal and Sikkim of India, western and south-western parts of Bhutan, and eastern Nepal. The landscape sustains vital rivers and watersheds and a wide variety of endemic and threatened species, including the red panda (*Ailurus fulgens*), takin (*Budorcas taxicolor*) and Siri cattle (*Bos indicus*), Yak (*Bos grunniens*) etc. Among them, the Siri (*Bos indicus*) is an indigenous cattle breed of the Khangchendzonga Landscape. It is well-adapted to climatic conditions at 1200–3000 meters above sea level. It can graze on steep slopes, survive on poor quality fodder and has high resistance to diseases. The total estimated Siri population in India (2013 census) is 17,749 (11,254 in Sikkim and 5,479 in West Bengal). Historically, Siri evolved as a crossbreed of the humpless Shorthorn cattle from Tibet and the humped (Zebu) cattle from the Indian subcontinent. It has a fatty hump on its shoulders, sharp, pointy horns, and a long tail that almost touches the ground. Its shiny coat is often black and white patterned, or red. Males are larger than females. Siri cattle are valuable to subsistence farmers in remote mountainous areas. Because of their size and strength, Siri bulls are excellent for draught work, ploughing, and threshing. A pair of bulls can plough 1.0 acres of land in 6–8 hours. Siri females are a great source of milk and milk products such as ghee (clarified butter) and chhurpi (hard cheese). In addition, Siri cattle provide manure for farming. Their meat is known to have a high nutritional value.

Besides, Yak (*Bos grunniens*) husbandry is an age-old practice across the Indian Himalayan highlands (Ladakh, Uttarakhand, Himachal Pradesh, Arunachal Pradesh, the West Bengal hills, and Sikkim), with several indigenous communities dependent on it. It is an integral part of the tradition, religion, and social life of the highland communities. However, in recent years, due to the impacts of climate change and other socio-economic drivers, there has been a waning interest in yak farming.

Keeping in view the socio-ecological and biodiversity conservation perspectives, there is an urgent need to conserve and manage these landscape entities' KL. Inline to the above, G.B. Pant National Institute of Himalayan Environment (NIHE), Sikkim Regional Centre under Khangchendzonga Landscape conservation and Development Initiative (KLCIDI)-India organized a Strategic meet – cum- Brainstorming on strengthen Yak and Siri based Network in Khangchendzonga Landscape on 10<sup>th</sup> December 2021 in Gangtok. The target group for the event were representations from KL-Nepal and KL-Bhutan, involved NGO(s) along with the Animal Husbandry Department, Government of Ladakh and Government of Sikkim, India, representatives from ICIMOD, Nepal along with KLCIDI-India team. The session was chaired by Dr. Tashi Dorjee, Program coordinator KLCIDI, ICIMOD, Nepal, and co-chaired by Dr. Karma T. Bhutia, Additional Director, DAHLF&VS, Government of Sikkim. The meeting was convened with deliberations, discussion and reflections followed by receiving feedback from the resource persons. A consensus was prepared to identify rearing clusters of these landscape entities and, develop a mechanism for genetic improvement and incentivize and streamline product value chains.



Team KLCIDI along with local partners from DISHA, Kalimpong in Siri rearing areas of KL-India

## Landscape Initiative for Far Eastern Himalayas

### Improving the hardware facilities of the homestays

#### होमस्टे की हार्डवेयर सुविधाओं में सुधार

हाई-लाइफ-इंडिया के एम'पेन II - 8वें मील गांवों और लामा गांव में विकसित पांच होमस्टे में बहते पानी की सुविधा प्रदान की गई थी।

The term "Home-stay" defines the period during which a visitor/ tourist stays with a local family. The main idea behind this homestay concept is to enable the tourist to study the local lifestyle, values, natural surroundings etc. of the residing villagers. Water is one of the most significant resources among the many basic essentials required for the accommodation of tourists. Water scarcity is a common factor in hilly regions, especially during the dry seasons. As such, provision of running

water facilities was provided in five home-stays developed in two selected villages, i.e. at M'Pen II - 8<sup>th</sup> mile (2 nos.) and Lama village (3 nos.). It consisted of necessary items such as wooden water stand, water storage tank, water motor and other materials. The required facilities [Fig.1 (a-c)] were provided for enhancing the home-stay services for comfortable stay of tourists that would further aid in promoting ecotourism in the area.



Set-up of Water facilities in selected villages i.e., M'Pen II (8th mile) and Lama village



## Capacity building and training on awareness of sustainable mountain tourism

सत्तत पर्वतीय पर्यटन के बारे में जागरूकता पर क्षमता निर्माण और प्रशिक्षण

ग्रामीणों के बीच उनके आसपास की विशाल जैव विविधता के संरक्षण और सुरक्षा के महत्व पर जागरूकता फैलाने के लिए 'सत्तत पर्वतीय पर्यटन' पर एक बैठक आयोजित की गई है। होमस्टे लाभार्थियों को सत्तत पर्वतीय पर्यटन को बढ़ावा देने के महत्व और क्षमता के बारे में बताया गया।

Mountains are the most attractive part of tourism. This is because mountain tourism can potentially arouse economic growth and social change on a local level. To strive for awareness on protecting the mountain biodiversity, a meeting was organized on 13<sup>th</sup> December, 2021 with home-stay beneficiaries at M'Pen II (8<sup>th</sup> mile) [Fig.4 (a-c)] on the theme 'Sustainable Mountain Tourism'. The main objective of the programme was to spread awareness among the villagers on the importance of conserving and protecting the vast biodiversity surrounding them. The homestay beneficiaries were informed on the significance and potentiality of promoting sustainable mountain tourism in these mountainous regions,

especially the Eastern Himalayan ranges; that would be beneficial for the socio-economic growth and development of their communities residing in and around Namdapha National Park. They were made to understand how, by taking small steps, local biodiversity (flora and fauna) can be conserved and how it can help attract tourists and eventually the livelihood. They were also informed about the importance of protecting their culture/traditional customs, folk dance, and local cuisines, which also helps overall tourism development. Other tourism sectors such as bird watching, locally made handlooms and handicrafts were also discussed as future options.



Meeting with homestay beneficiaries on International Mountain Day

## Capacity building and training on environmental awareness for school students

स्कूली छात्रों के लिए पर्यावरण जागरूकता पर क्षमता निर्माण और प्रशिक्षण

गवर्नमेंट मिडिल स्कूल, मियाओ, चांगलांग जिले में एक दिवसीय जागरूकता कार्यक्रम आयोजित किया गया। छात्रों ने सीखा कि कैसे अपने गांवों में पर्यावरणीय पर्यटन को बढ़ावा देकर युवा पीढ़ी और उनके समुदायों की आजीविका में सुधार किया जा सकता है। कार्यक्रम का मुख्य लक्ष्य युवा लोगों के बीच स्थानीय क्षेत्र में खतरे वाले जानवरों के स्थानीय शिकार को रोकने में मदद करने के लिए जागरूकता बढ़ाना था, विशेष रूप से जंगली मांस के लिए जंगली पक्षियाँ।



Awareness programme on 'Wildlife & its significance towards ecotourism development

Wildlife and ecotourism are essential in achieving sustainable development goals. Through ecotourism, wildlife resources and habitats are sustainably conserved and vital environmental services are sustained. The presence of wildlife protects the habitat and stimulates the natural environment, which contributes to a cleaner environment. Wildlife resources help attracts tourists leading to revenue generation for the local communities. Wildlife tourism is interacting with wild animals in their natural habitat, forming an important part of the tourism sector. As such, a one-day awareness programme on "Wildlife and their significance towards ecotourism development" was organized on 16<sup>th</sup> December 2021 with school children at Government Middle School, Miao Singpho Village, Miao, Changlang district. The main goal of the program was to raise awareness among young people to help prevent local hunting of threatened animals in the local

area, especially wild birds for bush meat. Mr. Phupla Singpho, a local NGO partner and Dr. M.S. Sarkar were the resource persons for the event. Students are provided with information about the importance of the surrounding wildlife and their conservation benefits. They also learned how to improve the livelihood of the younger generation and their communities by promoting ecotourism in their villages. They were taught about the variety of animals found in and around Namdapha National Park and how protecting these species can help restore the forest ecosystem, which is essential to balance the various changes that occur due to climate change. They were informed to spread this information among their relatives and family members and stop hunting local wild birds in their area for meat. A total of 37 participants (Male=17, Female=20) attended the programme.



## Linking home-stays with tourism operators

होम-स्टे को पर्यटन संचालकों से जोड़ना



Training programme on Linkages with Tourism Operators

होमस्टे के उचित कामकाज और पर्यटक प्रवाह को बढ़ाने के लिए बुनियादी आवश्यकताओं के बीच समन्वय विकसित करने के लिए स्थानीय टूर ऑपरेटरों और होमस्टे लाभार्थियों के बीच एक प्रशिक्षण कार्यक्रम आयोजित किया गया था। प्रतिभागियों को बताया गया कि कैसे पर्यटन संचालकों के साथ उचित समन्वय उन्हें होम-स्टे को सुचारू रूप से चलाने में मदद कर सकता है।

Tour Operators (TO) are a key factor in the success of the tourism industry as it is their sole responsibility to provide the tourists with the ultimate travelling experience. The main function of TOs is to organize all basic/necessary services to the tourists such as transportation, accommodations, site seeing etc. They are the brains behind the beauty of vacation by leveraging their expertise and resources. They are also responsible for creating and maintaining tour packages that include preparing activities that appeal to tourists on trip. Tourism is an upcoming sector that could spark the economic growth of a region or country with breathtaking scenic beauty. This could help communities earn a reliable and steady source of income with such significant resources. Based on this, a "Linkages with Tourism Operators" training programme was organized on 9<sup>th</sup> November 2021 at Namdapha Jungle camp, Miao [Fig. 6 (a-b)]. All homestay beneficiaries were invited along with tour operators of the locality, i.e., Mr. Phupa Singhpho (Owner of Namdapha Tours and Treks) and Mrs. Bella

Tikhak (Owner of Miaopum Tours and Travels). A total of 11 participants attended the programme. The main goal of this program was to enable homestay participants to understand the proper functioning of homestays and the basic requirements needed to increase the flow of tourists. Participants were told how proper coordination with tourism operators could help them run their home-stay smoothly, as they play a major role in advertising and promotion. The tour operators agreed to bring tourists for sighting seeing of the area as well as for staying purposes. They were also interested in bringing tourists for rafting and angling, which would further boost ecotourism and attract more tourists to visit the homestays. This would help generate income for the upliftment of their livelihood and sustainable ecotourism development, which is the main aim of the HI-LIFE project in India. So, in this way, an understanding between tour operators and homestay operators was developed for mutual benefit sharing.

## TOPICAL ARTICLE

### Kailash Sacred Landscape

#### Phyto-diversity of Kailash Sacred Landscape – India at a glance

#### कैलाश पवित्र परिदृश्य भारत की फाइटो-विविधता - एक नज़र में

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पौधे जैव विविधता का एक अभिन्न अंग हैं। पौधों के बिना पृथ्वी पर जीवन अकल्पनीय है। पवित्र कैलाश भू क्षेत्र - भारत, हिमालयी जैव विविधता के एक बड़े हिस्से को समाहित करता है। यह भूभाग जैव विविधता के विभिन्न अवयवों की प्रचुरता और विशिष्टता का प्रतिनिधित्व करता है। पिछले 2-3 दशकों के दौरान कई कारकों जैसे जलवायु परिवर्तन, भूमंडलीय ऊष्मीकरण, महत्वपूर्ण प्राकृतिक संसाधनों का अत्यधिक दोहन, वनों के कटाई, वन क्षरण आदि के कारण जैव विविधता विश्व स्तर पर प्रभावित हुई है। किसी भी स्थान की जैव विविधता संरक्षित करने हेतु सर्वप्रथम उस स्थान की जैव विविधता संबंधी जानकारी जैसे कि उस स्थान पर कितनी प्रजातियां उपस्थित हैं, उनमें से कितनी मूल्यवान प्रजातियां हैं, किस वास स्थान में किस तरह की प्रजातियां पाई जाती हैं। प्रजातियां किस तरह के प्राकृतिक या मानव-जनित कारकों के कारण प्रभावित हो रही हैं, उनका का ज्ञान होना आवश्यक है। इसी क्रम में प्रस्तुत लघु लेख में पवित्र कैलाश भू क्षेत्र - भारत की पादप जैव विविधता को दर्शाने का प्रयास किया गया है। पवित्र कैलाश भू क्षेत्र के भारतीय भूभाग में पौधों की 1,593 प्रजातियां आवृतबीजी और अनावृतबीजी पायी जाती हैं, जो कि 145 कुलों व 741 जातियों के अंतर्गत हैं। इन 1,593 प्रजातियों में से 768 जड़ी-बूटियाँ हैं, 447 झाड़ियाँ हैं, और 378 पेड़ हैं। इसके अतिरिक्त कैलाश भू क्षेत्र में अंतर्राष्ट्रीय प्रकृति संरक्षण संघ द्वारा निर्मित लाल सूची (रेड लिस्ट) की 10 संकट-ग्रस्त पादप प्रजातियां भी पायी जाती हैं।

Plants are an integral part of biodiversity. All the life which exists on Earth is due to plants. There are about 3,20,000 species of plants, of which the great majority, some 260-290 thousand, produce seeds. Green plants provide a substantial proportion of the world's molecular oxygen and are the basis of most of Earth's ecosystems. Plants that produce grain, fruit, and vegetables also form basic human foods and have been domesticated for millennia. Plants have many cultural and other uses, such as ornaments, building materials, writing materials, and, in great variety, have been the source of medicines and drugs.

The prevailing physiographic diversity and unique biogeographic location of the Indian part of Kailash Sacred Landscape (KSL-India) provide enough

opportunities to exhibit richness, representativeness, and uniqueness of biodiversity components at different levels (i.e., genetic to ecosystem). Among different forms of biodiversity, the plant diversity of KSL is vibrant and diverse due to its vast altitudinal range. From algae to angiosperms, every plant group is found in KSL-India. The landscape represents four major ecoregions: (i) Himalayan Sub-tropical pine forests, (ii) West Himalayan broadleaf forests, (iii) West Himalayan subalpine conifer forests, and (iv) West Himalayan alpine shrubs and meadows.

The land cover assessment indicates nearly 32% of plant cover, including village forests and trees outside forests in the landscape. Alpine meadows occupy almost 5% of the landscape, and more than



one third is covered by snow and glaciers in the high-altitude region. Forests constitute about 26% of the land cover in the landscape. The target landscape exhibits excellent variability in geological and physiographic forms. Broadly KSL-India covers three major physiographic zones viz., Trans Himalayan zone in the north (occupies > 40%), followed by the Greater Himalayan zone towards the south, and the southernmost Lesser Himalayan zone (most inhabited zone), which is nearly forms 40% of the target area. The landscape shows great variation in altitude, which ranges from < 500 m to peaks ranging > 7000 m above mean sea level.

From about 400m asl at Pancheshwar, at the confluence of the *Saryu* and *Kali/Sharada* rivers, to 7434m at the summit of Nandadevi East, KSL-India represents the most diverse ecosystems in the

Western Himalayan region (Fig. 1). Biogeographically the landscape lies at the confluence of Western, Central and Trans-Himalaya, where floral and faunal elements converge. The landscape is divisible into the following major life zones or eco-climatic zones based on the altitude and climate:

- (i) Sub-tropical zone
- (ii) Warm temperate zone
- (iii) Cool temperate zone
- (iv) Sub-alpine zone
- (v) Alpine zone of the greater Himalaya
- (vi) Alpine arid zone of Trans-Himalaya

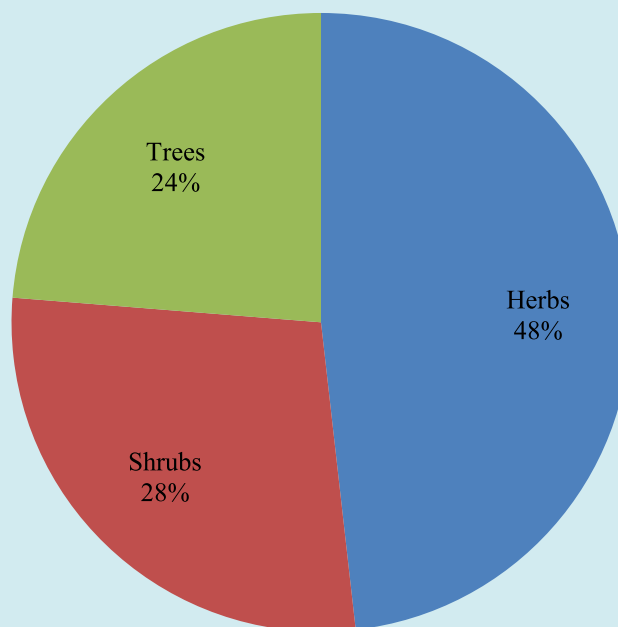
KSL-India harbours 1,593 plant species (Angiosperms and Gymnosperms) belonging to 145 families and 741 genera. Angiosperms are represented by 1,554 species under 136 families



**Figure 1:** Eco-climatic zones in KSL-India A) Sub-tropical zone, B) Warm temperate zone, C) Cool temperate zone, D) Sub-alpine zone, E) Alpine zone of greater Himalaya, F) Alpine arid zone of Trans-Himalaya.

and 715 genera, while Gymnosperms are represented by 39 species under 9 families and 26 genera. Among the 1,593 species, 768 are herbs, 447 are shrubs, and 378 are trees (Fig. 2). Among Angiosperms family Asteraceae is the largest family in KSL-India with 107 species, followed by family Orchidaceae (82) and Rosaceae (79 species). As far as Gymnosperms are concerned family Cupressaceae with 14 species, is the largest family (Table 3). As far as genera are concerned, *Astragalus* is the largest genus with 20 species, followed by *Cotoneaster* (18) and *Potentilla* (16). According to the IUCN (International Union for Conservation of Nature) list of threatened plants, 10 plant species of

KSL-India are placed under three high risk threatened categories viz. Critically Endangered, Endangered and Vulnerable. In KSL-India 10 species represented by 9 genera and 9 families are in high-risk threat categories. Out of the 10 threatened species, 3 species namely *Lilium polyphyllum*, *Nardostachys jatamansi* and *Saussurea costus* are Critically Endangered; 4 species *Aconitum heterophyllum*, *Angelica glauca*, *Pittosporum eriocarpum* and *Taxus wallichiana* are Endangered; and 3 species *Aconitum violaceum*, *Cephalotaxus mannii* and *Ulmus wallichiana* are Vulnerable.



**Figure 2:** Proportion of different growth forms viz. herbs, shrubs, and trees in KSL-India



## An overview of Lichen Diversity in Kailash Sacred Landscape – India

### कैलाश पवित्र परिदृश्य भारत में लाइकेन विविधता का एक सिंहावलोकन

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लाइकेन प्रकृति में सबसे सफल सहजीवी जीव हैं जो पृथ्वी के स्थलीय क्षेत्र के 8% या उससे अधिक पर हावी हैं। वे विविध पर्यावरणीय परिस्थितियों के अच्छे संकेतक हैं। लाइकेन की 6 प्रमुख किस्मों की विशेषताओं पर चर्चा की गई। कैलाश पवित्र परिदृश्य में लाइकेन विविधता का प्रतिनिधित्व 115 जातियों और 42 परिवारों के अंतर्गत आने वाले 387 प्रजातियों द्वारा किया जाता है। लाइकेन की यह विस्तृत सूची प्रबंधन के हस्तक्षेप और भविष्य की नीति तैयार करने में मदद कर सकती है।

Lichen is a self-sustaining ecosystem formed by interacting with an exhibiting fungus and an extracellular arrangement of one or more photosynthetic partners and an indeterminate number of other microscopic organisms. The external morphology of lichen thallus is determined by the mycobiont except in some genera. In most lichens, 90-95% of the thallus is made up of mycobionts; hence the morphological diversity of the thallus is directly dependent on the nature, growth and modifications of the mycobiont hyphae. Based on habit or growth form, lichen thalli are categorized into six types i.e., leprose, crustose, squamulose, foliose, dimorphic, and fruticose.

1. Leprose (powder-like): This is the smallest form of lichen thallus in which the thallus remains in powdery form. 2. Crustose thallus (crust-like form): Most lichens exhibit this category in which lichens grow directly on the surface of the substrate (episubstratic) or inside the substrate (endosubstratic). Such kinds of lichens cannot be detached without destruction. 3. Squamulose thallus: This is the intermediate form of crustose and foliose lichens. It has rounded to oblong minute lobules or squamules distinct from each other. 4. Foliose thallus (leaf-like form): This is the leafy form of lichens and is usually attached to the substratum by rhizines arising from the lower surface of the thallus. Thalli are generally orbicular, suborbicular, or irregular in outline with round, subrotund, narrowly elongate or lacinate lobes. 5. Dimorphic thallus: In this category, the thallus exhibits horizontal as well as vertical structures. 6.

Fruticose thallus (shrubby form): This type of thallus is shrubby in form and usually attaches to the substratum by a holdfast. Different lichen habits are shown in Figure 1. As the lichens are well recognized for their sensitivity towards pollution, they thrive very well in higher altitude areas where the pollution level remains low compared to low-land areas. Lichens are the most successful symbiotic organisms in nature which dominate 8% or more of the Earth's terrestrial area. They are good indicators of diverse environmental conditions. The high sensitivity of lichens to changing climate events is well recognized. Their slow growth rate allows the lichens to integrate the climatic conditions and modify their habitat as per the requirements.

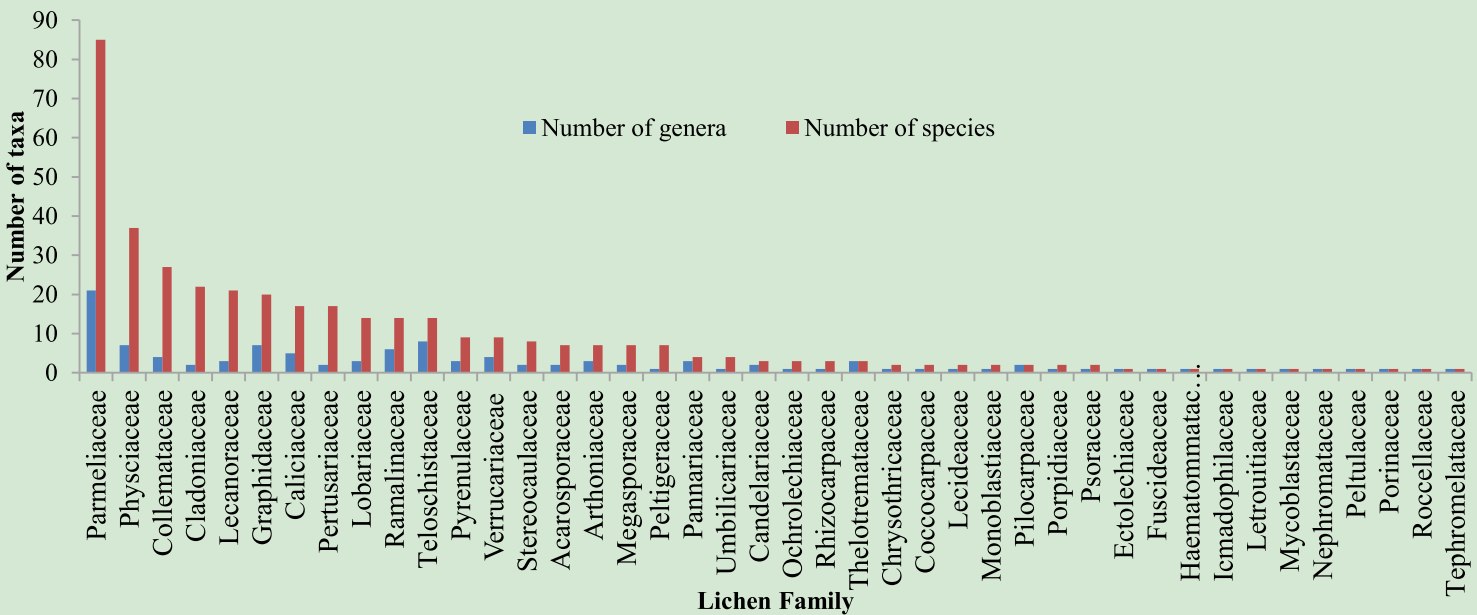
Different forest types, alpine meadows, and debris on glacial moraines of KSL - India provide suitable habitats with a congenial environment for the growth of different lichen species. The lichen diversity in KSL is represented by 387 species belonging to 115 genera and 42 families (Figure 2). Family Parmeliaceae, with 85 species, dominates KSL - India followed by Physciaceae (37) and Collemataceae with 27 species. As far as growth forms are considered, KSL - India shows the dominance of foliose growth form (180 species) which was followed by crustose (132), fruticose (27), dimorphic (22), squamulose (22), leprose (4) (Figure 3). On the basis of habitat, the maximum species in KSL - India are corticolous, i.e., growing on the bark of trees (145),

followed by saxicolous, i.e., growing on rock (68) and 63 species are found growing on both bark and the rock.

The distribution of species based on habitat preferences of lichen species of KSL - India is given (Figure 4).

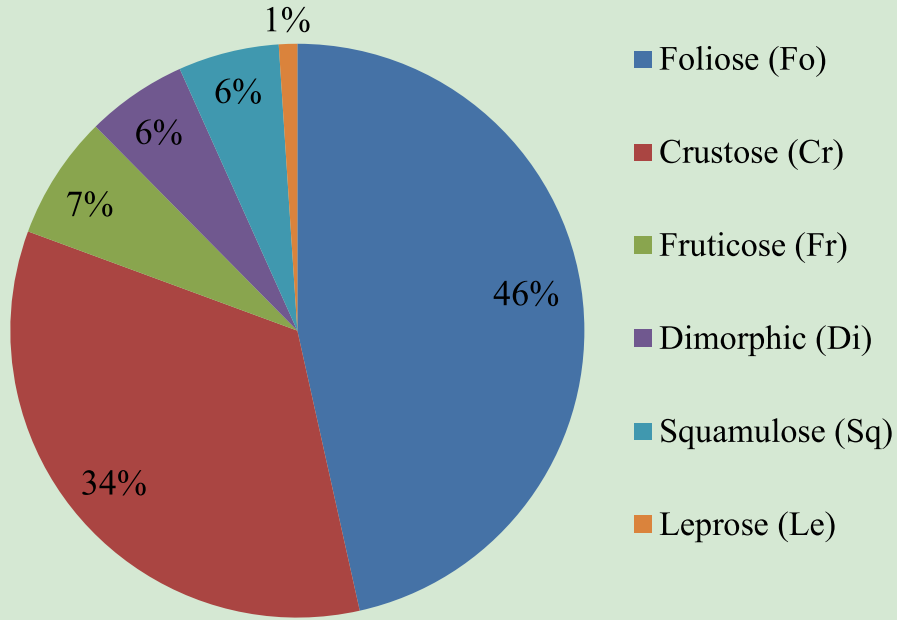


**Figure 1:** Different habits/ growth forms of lichens A) Leprose, B) Crustose, C) Squamulose, D) Foliose, E) Dimorphic, F) Fruticose

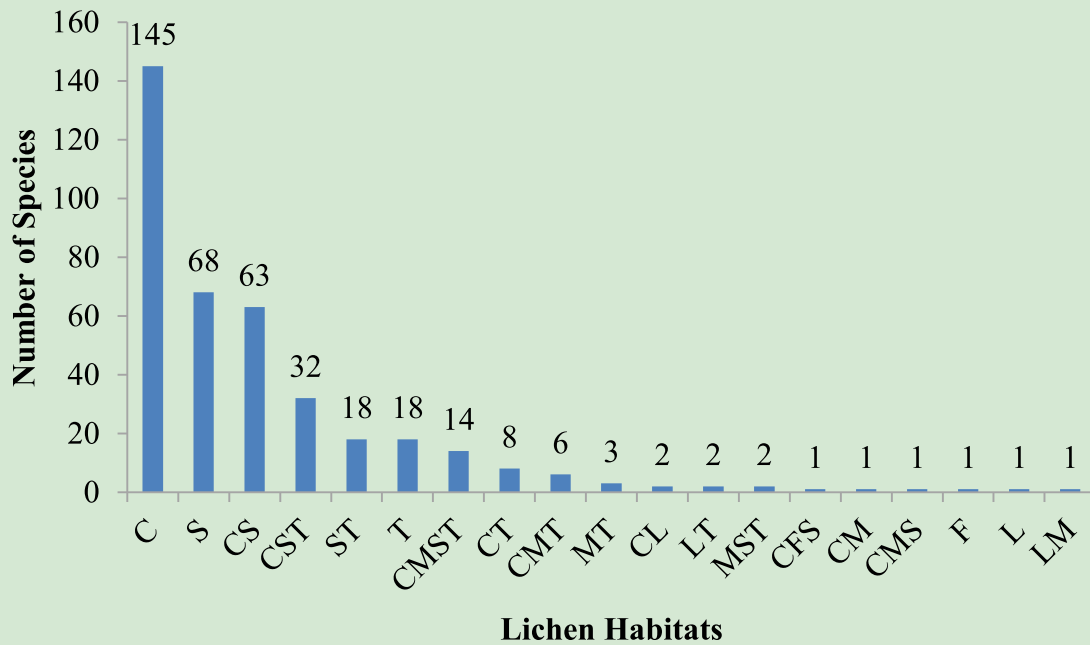


**Figure 2:** Distribution of genera and species among lichen families in KSL - India





**Figure 3:** Different habits/growth forms of lichens in KSL - India



**Figure 4:** Different habitats of lichens in KSL - India

Note: C = Corticolous, F = Follicolous, L = Lignicolous, M = Muscicolous, S = Saxicolous, T = Terricolous

## Opportunities of Homestay Tourism in KSL-India

### KSL-भारत में होमस्टे पर्यटन के अवसर

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*"In those lovely valleys, there is still the romance and poetry of life: each tree has its god, each bush its spirit".*

Charles A. Sherring, 19<sup>th</sup> Century

होमस्टे पर्यटकों के ठहरने की एक व्यवस्था है, जिसमें पर्यटकों को गृहस्वामी द्वारा आश्रय प्रदान कर स्थानीय सामाजिक व संस्कृति जीवन शैली को देखने व अनुभव करने का अवसर प्रदान होते हैं। यह ग्रामीण क्षेत्रों में हाल ही में विकसित, तेजी से उभरती हुई पर्यटन अवधारणा है। होमस्टे अपने आसपास के पर्यावरण को संरक्षित करने में निहित स्वार्थ के साथ सामान्य समुदाय के सदस्यों को सीधे सशक्त व लाभान्वित करते हैं। पर्यटक को होमस्टे के दौरान अनूठा अनुभव प्रदान होता है, तथा मेजबान को अपनी संस्कृति को प्रसारित करने के साथ-साथ अपनी बुनियादी जरूरतों (आजीविका) की पूर्ति का अवसर प्रदान होता है। यह आगंतुकों को उन क्षेत्रों में सदियों से फल-फूल रही समृद्ध संस्कृति व व्यंजनों के करीब लाता है। पवित्र कैलाश भू-क्षेत्र ऐतिहासिक रूप से कई संस्कृतियों एवं सूक्ष्म संस्कृतियों के लिए एक एम्फीथिएटर के रूप में विकसित हुआ है यह भू-क्षेत्र मुख्य रूप से अपनी आकर्षक प्राकृतिक सुंदरता, सांस्कृतिक विरासत मौसमी विविधता, जैविक भोजन एवं उच्च आतिथ्य के लिए प्रसिद्ध है। यहाँ अनेक स्थान जैसे-दारमा, ब्याश, चौदास, मिलम, मुनस्यारी, चौकोडी, चंडाक व गंगोलीहाट रमणीक स्थानों में हैं जहाँ लोग ग्रामीण जीवन का आनंद ले सकते हैं। यहाँ की काली, धोली, गोरी, रामगंगा एवं सरयू नदी घाटियों में विभिन्न जातीय एवं सांस्कृतिक समूह विकसित हुए हैं। पवित्र कैलाश भू-क्षेत्र भारत में लगभग ५८० होमस्टे पंजीकृत है, जिसमें धारचूला व मुनस्यारी विकासखंडों के ऊँचाई वाले क्षेत्रों में अधिकतम संख्या में होमस्टे उपलब्ध है। भू-क्षेत्र में होमस्टे पर्यटन को प्रभावी बनाने के लिए स्थानीय लोगों का क्षमता विकास, सड़क-बिजली दूरसंचार विकास एवं स्वास्थ्य सेवाओं जैसे बुनियादी ढांचे में सुधार की अत्यन्त आवश्यकता है।

A homestay is a form of lodging, that guest tourists are exposed to learn the culture and lifestyle of the homeowner, who is willing to transmit and share their culture. Homestays are distinct from other forms of development by offering the traveler a unique experience that combines one's basic needs (food, shelter) with the host's culture. It is a recently-evolved fast-emerging tourism concept, especially in remote areas. Homestays directly empower and benefit the same community members with a vested interest in preserving their surrounding environment. In Uttarakhand, the homestay concept has great potential as it blends well with the Uttarakhand culture and environment. The homestay concept allows the visitors to live with the natives as they are involved and see the villagers' social and cultural lives. It brings the visitors closer to the rich culture and cuisine thriving for ages in those areas. It provides rural surroundings, nature's touch, zero pollution and zero noise. In the state of

Uttarakhand, there are over 3,700 homestays registered under the Uttarakhand tourism scheme (Uttarakhand Tourism Development Board). The major homestay areas in the state are within the fringes of Nanda Devi National Park, Valley of Flowers, Panchachuli, and Pindari areas.

### Homestay Tourism in KSL-India

Kailash Sacred Landscape-India (KSL-India) represents one of the unique cultural sites, which has historically evolved as an amphitheatre for several cultures and micro-cultures, blending with each other, forming a rainbow of cultural commonality. Various ethnic and cultural groups have evolved in the river valleys of *Kali*, *Dhauri*, *Gori*, *Ramganga*, and *Saryu*. The landscape has been a centre of activities of ethnic, linguistic and cultural groups, which came from different directions at different times. It is highly imperative to document and conserve their cultural values, customs and traditional wisdom in today's fast changing environment.



KSL-India is one of the destinations usually found in a list of travellers. This is primarily because of its enchanting natural beauty, cultural heritage, seasonal diversities, organic food, and warm hospitality. There

are about 580 homestays registered in the Kailash Sacred landscape-India. A maximum number of homestays are in the high-altitude region of *Dharchula* and *Munsyari* developmental blocks.

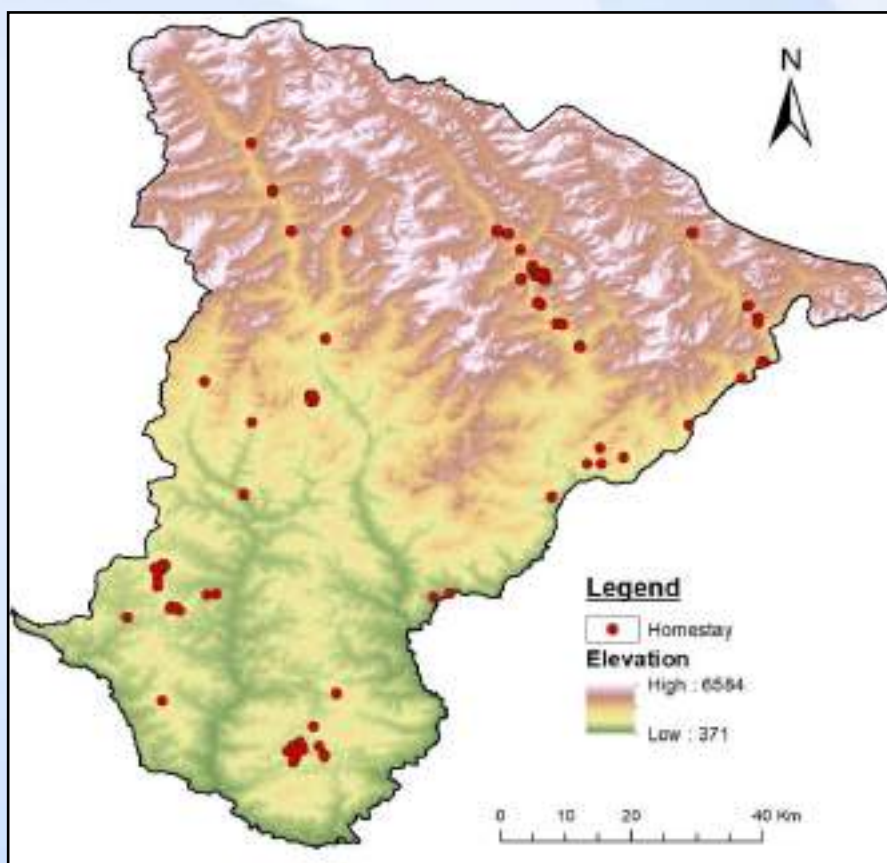


Status of homestays in KSL-India (Source: Uttarakhand Tourism Development Board)

Most of the homestays in the landscape are developed in areas where there is a lack of connectivity or no road network. In these places (*Dharchula* and *Munsyari*), road maintenance is challenging, as the precipitation during the monsoon season remains very high, which also happens to be the ideal season for tourists to visit the areas.

#### Scope of Homestay Program in KSL-India

Homestay programs essentialize rural lifestyles and livelihoods. In other words, being rural and remote, practicing subsistence agriculture, exhibiting a cultural heritage, promoting community economic development (CED), and the Himalayan landscape are advantages for communities that participate in homestay programs. There are several areas in KSL-India, where people can enjoy rural life. Given its geographical location, communication system, and local economy, KSL-India is considered a rural district. About 87% of the population resides in rural



Distribution of homestays in the KSL-India.

areas, and the urban area having only 0.38%, contributing 13% of the total population. Rural and remote isolated locations are the best places for homestays viz., *Darma, Byans, Milam, Chaudans, Milam, Munsyari, Chaukori* and *Gangolihat* are among the best places because, it combines basic home structures with a rural environment.



Rural settlement in mid-altitude (1,500m) in KSL-India.

Homestay programs in KSL-India can also be linked to agri-tourism programs. There are about 97 crops (cereals-08, millets-06, pulses-15, oilseeds-11, vegetables-28, spices and condiments-10, fruits-19) are being cultivated. Today the need of the hour is to conserve and sensitize youth to traditional agro-diversity and promote it to be known as a "regional heritage" of the landscape. Visitors will have a chance to experience the rural lifestyle of a community in which farming is an integral part. In other words, tourists will directly experience this type of subsistence farming.

Preserved local traditions and rituals are attractive phenomena for homestay tourists. KSL-India maintains its own cultural heritage where, 7 major indigenous cultural groups have evolved around the river valleys of *Kali, Dhaul, Gori, Ramganga* and *Saryu*, where there is a difference in their cultural belief and local dialect in each cultural zone. There are about 139 small and large Sacred Natural Sites (SNS). These places play an essential role in managing natural and cultural diversity. Villagers have been protecting these sites for generations by offering them to local gods and goddesses.

### Challenges of Homestay Tourism in KSL-India

Tourism development in a particular place has a positive influence on the livelihood of the local people. On the other hand, it also negatively impacts the local people's lifestyle, making them lose their own traditional culture and heritage. Some of the areas may be addressed while promoting tourism in the landscape:



Village settlement in high altitude (3,800m) region of KSL-India.

- ❖ Poor infrastructure such as lack of road connectivity, insufficient electricity supply, lack of telecommunication and inadequate healthcare services negatively impacts homestay initiative in the remote landscape.
- ❖ There is a lack of skilled human resources viz., service providers, entrepreneurs, guides, etc., due to the unavailability of training institutions in the region.
- ❖ Inhabitants in the remote areas are not aware of the Government schemes, regulations, registration parameters and other policies related to homestay business.
- ❖ Poor marketing network is also a challenge for homestay tourism in the KSL-India. It is imperative to promote KSL-India as a homestay destination.
- ❖ Lack of coordination among entrepreneurs, government bodies, non-government organizations, intermediaries and others could be a significant challenge for homestay tourism.
- ❖ To successfully develop homestays in KSL-India, it is vital to conserve natural resources and cultural heritage. The local people should be encouraged to take initiatives to preserve their traditions and resources.
- ❖ The safety and security of the travellers is another prime issue of concern. KSL-India needs to setup better safety measures for the tourist visited.



## Landscape Initiative for Far Eastern Himalayas

### Namdapha Butterfly Meet, 2021

### An initiative towards ecotourism development in HI-LIFE Landscape, India

### नमदाफा बटरफ्लाई मीट, 2021

### HI-LIFE लैंडस्केप, भारत में पर्यावरण-पर्यटन विकास की दिशा में एक पहल

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हाल ही में, पार्क पूर्वोत्तर क्षेत्र में एक उत्कृष्ट तितली-पर्यटन के रूप में लोकप्रिय हो रहा है, जिसके आधार पर राज्य को "भारत की तितली राजधानी" घोषित किया जा सकता है। नमदाफा राष्ट्रीय उद्यान (एन.एन.पी) के आसपास के क्षेत्र में इन खूबसूरत जानवरों के संरक्षण और सुरक्षा के महत्व के बारे में स्थानीय युवाओं के बीच जागरूकता पैदा करने के लिए 2018 में नमदाफा राष्ट्रीय उद्यान में बटरफ्लाई मीट शुरू की गई थी। नमदाफा बटरफ्लाई मीट, 2021 में तितलियों की कुल 410 प्रजातियां दर्ज की गईं। यह आयोजन स्थानीय समुदाय को HI-LIFE परितुश्य में इको-टूरिज्म के विकास में शामिल होने में मदद और प्रज्वलित कर सकता है।

The Namdapha National Park/Tiger Reserve (NNP/TR), situated in eastern Arunachal Pradesh, lies within the Indian part of the HI-LIFE transboundary landscape. It has high species diversity and endemism as it forms the transition zone between the Indian and Malayan eco-regions. The park is also unique worldwide, with snow-clad mountains and tropical rainforests within its jurisdiction. As such, this region is a renowned spot among tourists, researchers, wildlife lovers etc. Therefore, the region can be developed into a fantastic place for ecotourism. Recently, the park is becoming popularized as an excellent butterfly destination in the Northeast region, based on which the state could be declared as the "Butterfly Capital of India". But due to continuous deforestation and logging within the forest areas, the population of butterflies is dwindling, which if not checked, might lead to the extinction of many rare/endemic species. Namdapha Butterfly Meet was launched in 2018 to promote this incredible biodiversity hotspot in the Eastern Himalayan sub-region for its rich and endemic biodiversity and frequent discovery of new species, especially butterflies. It is basically a way to create awareness among the local youth in the area about the importance of conserving and protecting these beautiful animals in the vicinity of Namdapha National

Park (NNP). So, to bring into focus the importance of these species, the Society for Education and Environmental Development (SEED), an NGO, organizes this programme every year with other organizations/institutes. Last year also they conducted the fourth edition of this meet along with Namdapha National Park/Tiger Reserve and Arunachal Tourism, in which researchers, students, and butterfly experts from different parts of the country, especially from Arunachal Pradesh, attended with much enthusiasm. One of our researchers also participated in the event scheduled from 25<sup>th</sup> to 27<sup>th</sup> September 2021 at the Deban camp of Namdapha National Park (NNP), Changlang district. The main goal of the event was to make the participants' especially students aware of the importance of nature conservation. The butterfly survey was conducted on the banks of the Nao-Dehing River and in-and-around the periphery of the NNP. Towards the end of the meet, a proper checklist through systematic study in the field was prepared that reported a total of 212 species of butterflies; of which some rare and beautiful species such as Saffron (*Motamassyla*), Koh-i-noor (*Amathuxidiaamythaon*), Yellow Vein Lancer (*Pyroneuralatoialatoia*), Zigzag Flat (*Odinadecoratus*) were also recorded. During the expedition survey, a cleanliness drive was also conducted by SEED (NGO) of

Roing, North Eastern Institute of Ayurveda and Folk Medicine Research (NEIAFMR) of Pasighat and NNP. The event has been hailed as India's largest butterfly gathering/ meet. According to records, roughly 1,500 species of butterflies are in the Indian forests, among which 900 species are found in the North-eastern region. And in Namdapha, a total of 410 spp. has been recorded through this event. The event has therefore added a new dimension to tourism in the HI-LIFE landscape by attracting many butterfly experts from different states like Kerala, Tamil Nadu, West Bengal,

Sikkim, Assam, and Uttar Pradesh etc. Butterflies also form an essential component of the food chain by playing a vital role as an indicator of a healthy ecosystem. This remarkable diversity of butterflies attracting tourists from different parts of the country could employ the local youths and help generate state revenue. Overall, the event can help and ignite the local community to get involved in developing ecotourism at the HI-LIFE landscape project site. involved in developing ecotourism at the HI-LIFE landscape project site.





## Promotion of cultural festival tourism in HI-LIFE landscape, Changlang district of Arunachal Pradesh

### अरुणाचल प्रदेश के चांगलांग जिले में HI-LIFE लैंडस्केप में सांस्कृतिक उत्सव पर्यटन को बढ़ावा देना

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अरुणाचल प्रदेश अविश्वसनीय संस्कृति की भूमि है जिसमें विभिन्न जनजातियाँ और समुदाय निवास करते हैं। पारंपरिक त्यौहार एक जनजाति की संस्कृति या धर्म को प्रदर्शित करते हैं जो एक समुदाय की पहचान और पैतृक जड़ों को संरक्षित करने में मदद कर सकते हैं। HI-LIFE परिदृश्य कई देशी जनजातियों के लिए एक मातृभूमि है जो नमदाफा राष्ट्रीय उद्यान/टाइगर रिजर्व की परिधि में बसे हुए हैं। चूंकि अधिकांश समुदाय ग्रामीण हैं, कृषिजा उत्पादन उनके जीवन का एक अभिन्न अंग है। यह स्पष्ट है क्योंकि उनके अधिकांश त्योहार कृषि प्रधान हैं। यहां प्रत्येक जनजाति के कुछ प्रमुख त्योहारों का वर्णन किया गया है। दिसंबर, २०२१ में हमारे क्षेत्र के दौरे के दौरान; चकमा समुदाय ने २ दिनों के लिए अपना पहला सामाजिक-सांस्कृतिक सह भोजन उत्सव कार्यक्रम आयोजित किया जिसमें १४ गांवों ने भाग लिया। इसे प्रोत्साहित करने की आवश्यकता है क्योंकि यह न केवल किसी की संस्कृति को बढ़ावा देने का एक तरीका है बल्कि इस क्षेत्र में सांस्कृतिक उत्सव पर्यटन को भी बढ़ावा देता है जो विदेशी और स्थानीय दोनों पर्यटकों को आकर्षित करने का एक साधन हो सकता है, और इस प्रकार क्षेत्र की जैव विविधता को संरक्षित और बनाए रखने में मदद करता है।

Arunachal Pradesh is the land of an incredible culture of diverse tribal communities. Festivals form a very integral aspect of the socio-cultural life of any community living in this part of the country. For ages, the various tribes and communities residing side by side have managed to maintain their own indigenous culture and traditions. Traditional festivals are generally related to culture or religion that binds people together by creating a sense of integrity between the communities. This further helps preserve one's culture and heritage, which is essential from a cultural tourism perspective; this facilitates attracting tourists/visitors interested in studying a community's culture and religious systems. Cultural festivals, as such, play a vital role in the tourism sector. Cultural festivals celebrated in various regions at specific times represent a region's or nation's cultural identity and ancestral roots (Huang, 2017; Lin and Hu, 2017). It is a gateway where visitors/tourists can invigorate and appreciate a specific destination's culture, local food, cultural events, shows, and historical sites celebrated/organized by a particular community (Zou et al., 2021).

The HI-LIFE landscape falls within the Changlang district which is located in the southeastern corner of the state. This region is the homeland of several fascinating and indigenous tribes, such as the *Tangsas*, *Singphos*, *Tutsas*, *Noctes*, *Lisus* (Yobin), with *Chakmas* and *Lamas*

settled in the periphery of Namdapha National Park/Tiger Reserve. As most of the indigenous populations are settled in villages in this part of the district, their main occupation is agriculture (mostly *jhum* cultivation due to less availability of lowland areas) and allied activities such as agricultural labourer, trade in local products etc. (Tam and Bagra, 2017). The festivals celebrated by these communities are attended by a large number of people from all over India. One such famous festival is the '*Pangsau Pass International Festival*', celebrated yearly in *Nampong* village of Changlang district. Here cross, border trading and cultural exchange with Myanmar take place. There is a display of locally prepared handlooms, handicrafts, food stalls displaying varieties of local dishes, musical performances, traditional activities, visits to historical sites like Stilwell road, the war cemetery of World War II, the lake of No Return etc. Some of the popular local cultural festivals celebrated by the tribes in this part of the district are described below:

#### 1. *Shapawng Yawng Manau Poi*

This is one of the foremost dance festivals of the *Singpho* community that is celebrated in the month of February (12<sup>th</sup>-15<sup>th</sup>) every year to pay tribute to their Great Grandfather (*Shapawng Yawng*). Singphos are one of the major tribes that inhabit in Changlang and Namsai

districts of Arunachal Pradesh and some places of Assam state as well. They offer prayers with religious feeling and traditional vivacity to conciliate the deities for good health, peace and prosperity in everyone's lives. Folk dances and songs are performed along with traditional instruments (*gong* and *drum*) in an open ground (Fig. 1 & 2). Here both genders participate in their traditional dress around the '*Manau Sadung*' (massive alter) in the centre of the festive ground. Here they also display their local delicacies, traditional attires, ornaments, and other items to promote as well as preserve their rich cultural heritage. This festival depicts unity (*Kumrum Manau*) among all the Singphos of Arunachal Pradesh, Assam and abroad to help encourage and publicize cultural exchange and foster a cordial relationship with all the neighbour tribes (Anonymous, 2019).

## 2. Moh-Mol

*Moh-Mol* is one of the leading agricultural-related festivals celebrated by the *Tangsas* during April, which signifies the end of an agricultural activity or the beginning of crop season. The *Tangsas* are basically the *Naga* tribe settled in the Changlang district of Arunachal Pradesh and some parts of Assam. Their life depends on agriculture. This festival is performed with utmost devotion and rituals by offering prayer '*ROM-ROM*' to please their Goddess of crops *Tungaja Chamja*, for good harvest, the prosperity of livestock and disease-free lives of their family member or village community. During the festival, shows of colourful traditional costumes, locally designed ornaments, and art and crafts are part of the rich cultural heritage of the *Tangsa* community. This festival is also celebrated to build energy and zeal to face the reality of life. It is a forum where one develops a strong bonding for a lifetime, so this festival is trendy among younger generations.

## 3. Pongtu Kuh

It is one of the significant festivals of the *Tutsa* tribe, which is celebrated every year on the 11<sup>th</sup> of April. The *Tutsa* tribe, which is a kind of *Naga* tribe in India, is found to reside in the Changlang and Tirap districts of Arunachal Pradesh. *Pongtu* is one of the oldest agricultural festivals celebrated on the eve of the rainy season. It is done before harvesting millet rice and to welcome the New Year. Prayers are offered to divine Goddess *Rangkhothak* for good harvest, prosperity and

protection from expected calamities, epidemics etc. On the appointed day of the festival, the *Thom* (*Drum*) is beaten by a wooden handle to proclaim the advent of the *Pongtu* festival. As per age-old customs, its celebration should be started by *Changra* village and ended by *Tut* village of the *Tutsas*. The festival's primary purpose is to strengthen unity and brotherhood among *kith*, *kins*, and *clans*. During the festival, they wear their traditional attire that is woven in almost every household.

## 4. Kuoshi

*Kuoshi* festival is celebrated to welcome New Year by the *Lisu* tribes (Fig.3). *Lisu*'s also called as '*Yobin*' is one of the 'minority' or 'lesser known' tribes of Arunachal Pradesh. They reside mainly in *Shidi* valley (officially known as *Gandhigram* village, one of the largest *Lisu* villages) and *Nibodi* village of the state that Namdapha National Park surrounds.

## 5. Bizhu

It is one of the most important socio-religious festivals of the *Chakma* community. They are one of the largest communities settled near the periphery of Namdapha National Park. *Bizhu* is a three-day long festival that is celebrated every year on the 13<sup>th</sup> or 14<sup>th</sup> of April, where they traditionally celebrate to welcome the New Year. The festival is closely linked with the practice of *Jhum* cultivation among the *Chakmas*. They believe the festival to appease the earth for a bountiful harvest. The first day of the festival is known as '*Phool Bizhu*' in which house cleansing and special prayers are offered to Lord Buddha; the second day is '*Mul Bizhu*', where people visit each other homes, play traditional games, perform *bizhu* dance and prepare local food and sweets. On the third day as, '*Gojjepojje din*' in which, various religious and social activities take place.

## 6. Pusna

*Pusna* is one of the most important harvest festivals celebrated by the *Hajongs* on 14<sup>th</sup> or 15<sup>th</sup> of January every year. *Hajongs* belong to the Bodo-Kachari group of tribes, whose ancestors migrated from Tibet to the Brahmaputra valley in the past; they have scattered in several directions and are also present in this part of the region. The festival is to celebrate *Makar Sankranthi*, in which families get together and prepare traditional *Pitha*'s (a glutinous rice flour). It is a traditional festival



celebrated to honour the *Bastu*, *Paabni* and other deities and it is conducted by a *Dyaoshi* or *Nungtang* (*Hajong shaman*).

## 7. Chalo Loku

*Chalo Loku* also known as 'Harvesting festival' or 'Thanks giving festival' is one of the major festivals of the *Noctes*. They are an ethnic Naga tribe that resides in the districts of Tirap and Changlang (Miao circle) of Arunachal Pradesh. It is celebrated for three days during October/November after crop harvest; to drive out the old season of the year. The festival's first day is called '*Famlam*', in which dishes and cups are prepared from Kow leaves collected from forest, killing animals and a bonfire. On the second day, i.e. '*Chamkatja*', prayers are offered for better crop production at a place known as '*Chaatom*' located on the village's outskirts. On the third day of the festival, i.e. '*Thanglangja*', the village elders and chief select agricultural plots for next year's *jhoom* cultivation.

These festivals are basically seen to showcase their varied and rich cultures, customs, traditional attires, ornaments, local cuisines, items used by their ancestors etc. It is an effort to preserve, protect and promote the age-old cultural heritage. By helping facilitate the festivals of this region, it would enhance cultural-festival tourism in the HI-LIFE region; thereby boosting the eco-tourism sector in this part of the state. Among all the festivals described, the Chakma festival was never celebrated in this region. So, to help promote cultural-festival tourism in the selected villages under the HI-LIFE landscape initiative project, a meeting was held among the village heads of the Chakma community to celebrate their festival. The Chakma community are the

most prominent settlers within the HI-LIFE selected project site (almost 22 villages around Namdapha National Park). As such, a two-day event celebration, i.e. from 11<sup>th</sup>-12<sup>th</sup> December 2021 on 1<sup>st</sup> Chakma socio-cultural and food festival (*Changma samajik ridi-sudom a kajdyo utsav*) 2021 was conducted at M'Pen II (8<sup>th</sup> mile) village (Fig.4). A total of 14 villages were engaged in the event. Many stalls were set up displaying various handloom, handicrafts, local medicinal plants for curing various diseases, local dishes, rice beer etc. (Fig.5 & 6), along with local games and traditional dance as well as a cultural program during the evening. We financially supported a food stall displaying locally prepared Chakma cuisines to support the event. The festival was attended by Dr Devansh Yadav (DC of Changlang district), Honorable Kamlung Mossang (Cabinet Minister, Food & Civil Supply, UD Housing, WRD) Government of Arunachal Pradesh and other distinguished guests. Even tourists visiting Namdapha National Park attended the festival. The prime purpose of the festival is to preserve and promote the rich culture of the Chakma community, awareness towards protecting and conserving the endemic and threatened floras and faunas of the Park, promotion of 5 homestays developed by the North East Regional Centre of GB Pant National Institute of Himalayan Environment; popularizing the local dishes, traditional handlooms, handicrafts, local folk dance and local medicinal plants. This cultural mosaic needs to be maintained, preserved and proliferated while keeping intact unity in diversity to help promote festival tourism in this part of the region, which is gaining popularity in recent times among foreign tourists as well as outside Northeast India.



Fig.1: Traditional entry during Shapawng Yawng Manau Poi Festival



Fig. 2: Dance in the traditional attire of Singpho's





Fig.3: Lisu girls in traditional dress



Fig.4: Socio-cultural and food festival of Chakma's



Fig. 5: Display of traditional dress of Chakma



Fig.6: Selling of local Chakma food items during festival

### References:

- Anon. (2019). Singpho Ethno Cultural Festival: 35<sup>th</sup> Shapawng Yawng Manau Poi, India. Namsai, Arunachal Pradesh (A souvenir).
- <https://changlang.nic.in/festival/moh-mol/> [Accessed on 1<sup>st</sup> June, 2022].
- <https://changlang.nic.in/festival/pongto/> [Accessed on 1<sup>st</sup> June, 2022].
- <https://en.wikipedia.org/wiki/Bizhu> [Accessed on 4 November, 2022].
- [https://en.wikipedia.org/wiki/Tangsa\\_Naga](https://en.wikipedia.org/wiki/Tangsa_Naga) [Accessed on 1<sup>st</sup> June, 2022].
- <https://factsanddetails.com/china/cat5/sub31/item183.html> [Accessed on 1<sup>st</sup> June, 2022].
- [https://www.indianetzone.com/45/loku\\_festival.htm](https://www.indianetzone.com/45/loku_festival.htm) [Accessed on 4 November, 2022].
- Huang, L. L. (2017). The challenges of the times faced by traditional Chinese festivals and the reshaping of contemporary values. *Journal of Xinyang Normal University*, 37 (5): 100-103.
- Lin, L. and Zhu, J. H. (2017). The reproduction of daily life and collective memory in villages in the context of urbanization: A case study of the customs of Lizhuang Lantern festival in the suburbs of wuhan. *Folklore Research*, 5: 140-148.
- Tam, N. and Bagra, K. (2017). Industrial use of bio-resources of Arunachal Pradesh. Arunachal Pradesh Biodiversity Board, Itanagar.
- Zou, Y., Meng, F., Bi, J. and hang, Q. (2021). Evaluating sustainability of cultural festival tourism: From the perspective of ecological niche. *Journal of Hospitality and Tourism Management*, 48: 191-199



## Khangchendzonga Landscape

### Evolving Concept of Organic Farming in Gorkhey and Samanden Forest Villages of Barsey-Singalila Pilot Site of Khangchendzonga Landscape-India

कंचनजंगा परिदृश्य-भारत के बर्से-सिंगालिला पायलट साइट के गोरखे और समंडेन वन गांवों में जैविक खेती का विकसित होनी अवधारणा

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रासायनिक उर्वरकों के प्रतिकूल प्रभाव को महसूस करते हुए, केएलसीडीआई-भारत कार्यक्रम के तहत कम लागत वाली कृषि प्रबंधन तकनीकों को बढ़ावा देकर एक प्रभावी और टिकाऊ जैविक खेती दृष्टिकोण अपनाया गया। प्रक्रिया में निम्नलिखित सरल चरण शामिल हैं: (1) सामुदायिक परामर्श, (2) संभावित लाभार्थियों की पहचान, (3) लाभार्थियों के लिए प्रशिक्षण और क्षमता निर्माण कार्यक्रम आयोजित करना, (4) प्रशिक्षित लाभार्थी को पॉलीहाउस, वर्मीकम्पोस्टिंग इकाइयों, पौधों और सब्जियों के बीजों की आपूर्ति करना, (5) पहल की निगरानी करना और लाभार्थियों को तकनीकी सहायता प्रदान करना। इस पहल को बड़ी सफलता मिली क्योंकि वर्तमान में अधिकांश किसान इस क्षेत्र में जैविक खेती कर रहे हैं और नई जैविक खेती तकनीकों से अपनी आजीविका का सृजन कर रहे हैं।

#### Background

The Khangchendzonga Landscape Conservation and Development Initiative (KLCDI) program is being implemented in the Khangchendzonga Landscape (KL) Indian part since 2017, and various activities were initiated to the uplift economy of rural people residing in the fringes of the KL. In line with this, the concept of organic farming was envisaged, implemented, promoted and supported in Gorkhey and Samanden forest villages of Barsey-Singalila pilot site, which are the remotest and transboundary villages connected to Nepal identified under KLCDI-India program. Sherpa is the dominant community in the area, and they were primarily dependent on small landholding-based traditional agriculture such as the cultivation of potatoes, maize and a few vegetables like peas, radish, etc. To enhance crop production and fulfil their requirements, farmers were focused on using inorganic fertilizers. An assessment of farming status was performed in the year

2017, and the results indicated that the majority of the farmers were using fertilizers (e.g., Urea 40-50 kg/year, super phosphate 30-40 kg/year, Di ammonium phosphate 30-40kg/year, as manures for crops in the fields). Additionally, in recent years crop depredation by wild animals, viz., wild boar, porcupine, asiatic black bear, has emerged as a prominent issue in the pilot site, and the agriculture productivity was in decline. Under such circumstances, the farmers looked forward to evade farming and adopting an alternative livelihood. In Gorkhey and Samanden villages, the farming occupation was beset with threats.

#### Initiatives undertaken

Realizing these, an effective and sustainable farming approach, i.e. organic farming through promoting low-cost farming management techniques like, bio and vermi compost, bio pesticides and off-season vegetable farming was initiated under the KLCDI-India program

organized in the villages (where 45% of females and 55% of males took part in each of the events). In phase four, low cost polyhouses and vermicomposting units, saplings of peach and yacon, vegetable seeds were provided to the trained beneficiaries in a participatory approach (i.e. construction material and technical guidance for polyhouse construction, bed making inside the playhouse, crop cultivation, irrigation, etc.) were provided by the GBPNIHE; however the construction cost was born by the respective beneficiary (Table-3). In phase five, monitoring of these initiatives and simultaneously technical support are being provided through KLCDI-India team and/or trained GETC members (photo-1d).

**Table 1. Seasonal crop calendar: Gorkhey and Samanden**

[illegible]



|  |  |  |  |  |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|--|--|--|--|
| <i>Perilla frutescens</i><br>(Silam)       |  |  |  |  |  |  |  |  |  |  |  |  |
| <i>Sechium edule</i><br>(Choyote)          |  |  |  |  |  |  |  |  |  |  |  |  |
| <i>Smallanthus sonchifolius</i><br>(yacon) |  |  |  |  |  |  |  |  |  |  |  |  |

Sowing Weeding Harvesting



Photoplate1. Phase-wise organic farming activities in Gorkhey and Samanden forest Villages of Barsey-Singalila pilot site of KLCDI-India  
A, b and c-Preparation of biopesticide, vermi-wash and vermi-compost, d- Distribution of support material to the identified beneficiary,  
e and f- Construction of participatory based low cost polyhouse and monitoring of polyhouse based organic farming.

**Table 2. List of beneficiaries supported for polyhouse based organic farming activities in Gorkhey and Samanden forest villages (Barsey-Singalila pilot site)**

| S.No. | Beneficiary (Village)          | Year of support | Type of support   |
|-------|--------------------------------|-----------------|---|
| 1.    | Bobin Rai (Gorkhey )           | 2017            | Polyhouse, vegetable seeds, peach and yacon saplings  |
| 2.    | Milan Rai (Samanden )          | 2017            | Polyhouse, vegetable seeds vermicomposting pit (Permanent), peach and yacon saplings                          |
| 3.    | Biren Rai (Samanden)           | 2018            | Vermicomposting pit (Temporary), peach and yacon saplings   |
| 4.    | Sonam Sherpa (Gorkhey)         | 2018            | Vermicomposting pit (Temporary), peach and yacon saplings   |
| 5.    | Dawa Dikki Sherpa (Gorkhey)    | 2019            | Polyhouse, vegetable seeds, peach and yacon saplings  |
| 6.    | Ramala Sherpa (Gorkhey)        | 2019            | Polyhouse, Vegetable seeds vermin pit, peach and yacon saplings   |
| 7.    | Bishnu Chettri (Gorkhey)       | 2020            | Polyhouse, vegetable seeds, peach and yacon saplings  |
| 8.    | Dawa Lhamu Sherpa (Gorkhey)    | 2020            | Polyhouse, vegetable seeds, Vermicomposting pit (Temporary), peach and yacon saplings                         |
| 9.    | Bishnu Chettri (Gorkhey)       | 2020            | Polyhouse, vegetable seeds, peach and yacon saplings  |
| 10.   | Nitesh Rai (Samanden)          | 2020            | Polyhouse vegetable seeds, vermicomposting pit (Permanent), vermiwash, biopesticide, peach and yacon saplings |
| 11.   | Lakpa Sangey Sherpa (Samanden) | 2020            | Polyhouse, vegetable seeds, peach and yacon saplings  |
| 12.   | Robin Rai                      | 2021            | vermicomposting pit (Permanent),  |
| 13.   | Usha Sherpa (Samanden)         | 2021            | Polyhouse, vegetable seeds, peach and yacon saplings  |
| 14.   | Threelion Rai (Gorkhey)        | 2021            | Polyhouse, vegetable seeds, peach and yacon saplings  |
| 15.   | Uden Tamang (Gorkhey)          | 2021            | Polyhouse, vegetable seeds, peach and yacon saplings  |



### Preliminary outcomes

Most of the farmers are at presently doing organic farming and keeping the concept of the organic farming. This has increased to about 90% of use of organic fertilizers, and composts. Seeds are used from local level, use of vermicompost, bio-compost, bio-pesticide, cow slury, and bio-fertilizers are followed. Monitoring of the progress showed that use of inorganic fertilizers, for crops in the fields has been curtailed as compared to the earlier use. Yearly the production of vermicomposting has been found increased. Polyhouse has been highly useful in producing off-season vegetables where there is no

crop production is available in farm level (Table 1). Polyhouse produce can be harvested three to four times a year using polyhouse technology and *Coriandrum sativum* is one such example which can be grown regularly throughout the year. The time gap between sowing and harvesting of vegetable crops inside polyhouse is duly shortened thereby amplifying extra benefits. *Brassica oleracea* has been newly introduced in farm. The newly introduced vegetables in the polyhouse are: *Beta vulgaris*, *Citrullus lanatus*, *Capsicum* sp. *Brassica oleracea* var. *italica*, *Spinacia oleracea*, etc. This initiative has added to help fill the gap in cropping pattern (Table 1). Vegetables such as *Beta vulgaris* and *Brassica oleracea* var. *italic* cannot be grown at all in outside field except inside the polyhouse.

**Table 3. Trend of vermicompost production in Gorkhey and Samanden (kg/yr).**

| S.No. | Beneficiary       | Total production (kg) |            |             |             |
|-------|-------------------|-----------------------|------------|-------------|-------------|
|       |                   | 2018                  | 2019       | 2020        | 2021        |
| 1.    | Dawa Dikki Sherpa | 40                    | 50         | 60          | 80          |
| 2.    | Sonam Sherpa      | 200                   | 250        | 300         | 400         |
| 3.    | DawaLhamu Sherpa  | 50                    | 80         | 100         | 150         |
| 4.    | Ramala Rai        | -                     | -          | 100         | 200         |
| 5.    | NiteshRai         | 200                   | 250        | 300         | 450         |
| 6.    | RupeshChettri     | 140                   | 150        | 210         | 250         |
| 7.    | BirenRai          | 20                    | 50         | 80          | 100         |
|       | <i>Total</i>      | <i>650</i>            | <i>830</i> | <i>1150</i> | <i>1630</i> |

Through the initiative, farmers continue to make organic products, hoping to sale these to tourists in the homestay. Showing the farmer's characteristic of self-dependency. The new organic concept has created the adoption of a systematic methodology to develop an organic farming system in a limited area, without any or negligible prior to training or support, which is the main feature of this initiative. Further, it has built health and ecology of the soil to maintain cycles, and sustainability in the area has been established. It has also created fairness with regard to the environment, and production which is based on ecological processes and recycling. In this manner, practitioners of organic

agriculture in Gorkhey and Samanden can enhance their efficiency and increase productivity, but this should not be at the risk of jeopardizing the health and well-being of the local community. If this effort continues like this, the farmer's farm could soon be a role model for motivation and emulation for farmers from all over the hills and beyond.

### Way forward

(1) To obtain organic certification for the village products; (2) Selecting of suitable food crops; (3) Identify markets for the products; and (4) Use of organic and locally prepared composts and pesticides for disease management.

## Improved Dairy Entrepreneurship in Ribdi-Bhareng (Barsey Singalila Transboundary Village) Khangchendzonga Landscape, India

रिबदी-भरेंग (बर्से सिंगलिला ट्रांसबाउंड्री विलेज) कंचनजंगा परिटुश्य, भारत में बेहतर डेयरी उद्यमिता

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यह 2017 से GBPNIHE, सिक्किम क्षेत्रीय केंद्र, (KLCDI)-भारत कार्यक्रम के निरंतर हस्तक्षेप के माध्यम से सिक्किम के पश्चिम जिला रिबदी-भरेंग ग्राम पंचायत इकाई (GPU) में डेयरी फार्मिंग प्रणाली में सुधार की एक बड़ी सफलता की कहानी है। निरंतर क्षमता निर्माण और ग्रामीणों को विभिन्न सहायता, औसत आय में बढ़ोतरी हुयी। 1,800/- से रु. 2017 से 2020 तक डेयरी फार्मों से 12,400/- रुपये। गांवों में डेयरी फार्मिंग को बढ़ावा देने से वन निर्भरता भी कम हुई है और युवाओं के रोजगार में वृद्धि हुई है।

Identified as a unique transboundary location in eastern Nepal, the Barsey-Singalila region covers parts of the west district of Sikkim and the Darjeeling district of West Bengal. The site has distinct elements of a) complex cultural and social assemblage (i.e., Nepali and Tribal); b) diverse eco-climatic zones spread along subtropical to sub-alpine range; and c) close connectivity among protected areas, i.e., Barsey Rhododendron Sanctuary (Sikkim) and Singalila National Park (West Bengal). The Barsey-Singalila site covers 80 km<sup>2</sup>, spreading along 1800 m asl to 3685 m asl, (Khopi-Ramitey, upper Ribdi, lower Ribdi, upper Bhareng and lower Bhareng under Ribdi- Bhareng GPU of West Sikkim are smaller hamlets). Ribdi-Bhareng (1756 m asl), having an area of 543 hectares, contains 324 households with a total population of 1536 persons. Sherpa, Rai, Chettri, Tamang and Gurung are the prominent dwelling communities. The male literacy rate of Ribdi-Bhareng is 60%, and the female rate is 50%. Agriculture and livestock rearing are major occupations of the people in Ribdi-Bhareng. Despite the fact that it is a biodiversity-rich area, the village is remotely located, exhibiting unpredictable weather conditions, inaccessible roads and communication networks, and limited landholdings and livelihood options. Other than this is that the site immensely impinges on the human-wildlife interface.

Improving dairy entrepreneurship is necessary to increase the village economy. Learning dairy techniques and entrepreneurial skills helps farmers improve their skills in animal husbandry by integrating

traditional and scientific knowledge. Furthermore, farmers with a willingness and progressive attitude towards bringing sustainable development in one's profession should do dairy farming. It will not only help bring sustainable development into society but also put restrictions on climate change impacts, resolve transboundary landscape issues focusing on the grazing sector, and facilitate cooperatives to sell dairy products. Since ours is the traditional way of dairy farming, the demand for dairy products is higher, whereas the highest-selling product is milk. Farmers need to decide on the selection of livelihood as livestock farming which is viable to the locations; in ahead, dairy relates to ecosystem services too. One such activity undertaken is to improve dairy farming. It is presently being implemented in Ribdi-Bhareng (Barsey-Singalila site of Khangchendzonga landscape India part) through adequate capacity enhancement programmes for people in the said landscape. This initiative is targeted to support the livelihood of the people. Additionally, for example, introducing the Siri cow (a traditional breed of Eastern Himalayan cow) in KSL sites will also be helpful in the conservation of the local environment. But before promoting dairy farming, managing locally available fodder species becomes pertinent.

Ribdi-Bhareng GPU (West Sikkim) village (Barsey-Singalila site) was identified as pilot village, under the plan of the Khangchendzonga Landscape Conservation and Development Initiative (KLCDI)-India programme of the GBPNIHE, Sikkim Regional Centre which rightly intended to contribute for the sustainable development



of the Khangchendzonga Landscape (KL) through resource management and strengthening livelihood initiatives. During action in this context, the Institute had conducted a training cum exposure visit on “Animal Nutrition and Health Care for Improving Dairy Production” jointly with The Mountain Institute-India India, DISHA, Kalimpong and Department of Animal Husbandry Department, Livestock & Fisheries & Veterinary Services Department, Government of Sikkim at Ribdi-Bhareng, West Sikkim between 16–18 November 2017. To provide an understanding of nutrient-rich feeding preparation and practices for milking cattle, provide orientation on animal health problems and medication (home remedies), develop coordination with line departments for strengthening veterinary services, and support learning through the exposure of well-established dairy entrepreneurs were the primary objectives of the training. A total of 50 farmer participants (including 15 female and the rest male) from Ribdi-Bhareng and Gorkhey-Samanden (02 male) participants, Darjeeling, grace the training with their presence.

Initiative achievement: (i) At the time of training sessions, some high-value speeches relevant to animal nutrition, feeding practices, use of nutritional food, and management of feed were thrashed out. Besides, deliberations on water requirement for livestock

minerals and its importance, milk production, demonstration on preparing feed mixture, different cattle diseases and their reasons and their respective treatments were presented, and participants were also shared with the traditional home treatment method for diseases.

Along with the classroom deliberations, an exposure tour of participants to the Dairy Farm of Mr. Phurtenzee Sherpa (National Awardee on dairy farming) and simultaneously to the house of cheese entrepreneur Mr. Dorjee Sherpa at *Anden Sombarey* was organized where the farmer participants learned concerning individual initiative of promoting dairy farming. (ii) On the closing day each participant was supported with a packet of medicine relevant to dairy farming. (iii) Additionally, in view of easing feed preparation a total of five chaff cutter machines were given to the farmers Ribdi-Bhareng. Through the KLCDI-India outreach program, the young farmers were trained to develop dairy entrepreneurship in the village and guide and mobilize other livestock owners towards diversifying livelihood options. Dr. D.S. Tewari, Animal husbandry department, Mr. MS Foning, Ms. Ambika Adhikari, Ms. Melissa, and Nalam Lepcha (DISHA, Kalimpong) enlightened the participants as resource persons of the training.





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traditional and scientific knowledge. Furthermore, farmers with a willingness and progressive attitude towards bringing sustainable development in one's profession should do dairy farming. It will not only help bring sustainable development into society but also put restrictions on climate change impacts, resolve transboundary landscape issues focusing on the grazing sector, and facilitate cooperatives to sell dairy products. Since ours is the traditional way of dairy farming, the demand for dairy products is higher, whereas the highest-selling product is milk. Farmers need to decide on the selection of livelihood as livestock farming which is viable to the locations; in ahead, dairy relates to ecosystem services too. One such activity undertaken is to improve dairy farming. It is presently being implemented in Ribdi-Bhareng (Barsey-Singalila site of Khangchendzonga landscape India part) through adequate capacity enhancement programmes for people in the said landscape. This initiative is targeted to support the livelihood of the people. Additionally, for example, introducing the Siri cow (a traditional breed of Eastern Himalayan cow) in KSL sites will also be helpful in the conservation of the local environment. But before promoting dairy farming, managing locally available fodder species becomes pertinent.

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| Parameters                    | Year- wise comparison |            |          |          |
|-------------------------------|-----------------------|------------|----------|----------|
|                               | 2017                  | 2018       | 2019     | 2020     |
| Av. number cow                | 2-3                   | 3-5        | 5-6      | 7-8      |
| Av. milk production/HH (ltr.) | 2 liters              | 3 liters   | 5 liters | 7-8      |
| Number of diaries present     | 01                    | 02         | 03       | 03       |
| Av. milk sell quantity(litre) | 1.5 liters            | 2.5 liters | 4 liters | 7 liters |
| Av. income/HH (Rs.)           | 1800                  | 3600       | 6000     | 12400    |

Now, in these three years, of time farmers of Ribdi-Bhareng possess 5-10 cows per household and have opened up three milk diaries so far (01 at Khopi khadka, 01 at Upper Ribdi and 01 at Upper Bhareng), producing 320 - 360 liters of milk daily selling to Sikkim Milk Karfector, Jorethang, @ Rs.60/liter, (among a progressive farmer Mr. Phurba Sherpa earns Rs.25,000/pm), through approximately 8-10 liters (by maintaining cow of 2-6/ family) of milk earning Rs.6,000/pm per household along with other incentive, converting it onto a promising livelihood option in village, look forward, as Shri Suman Rai one of the villagers quotes as “after the arrangement of training by the NIHE-SRC the villagers really got motivated and taking the profession forward without any government support”. Whereas livestock fodder at the village is managed using farmland species, e.g., *Digitaria ciliaris*, *Zea mays*, *Arundo donax*, *Benincasa hispida*, *Cucurbita pepo*, *Sechium edule*, etc. (based on GBPNiHE feedback). Around 15% of the farmers purchase *Samrat* feed, *kutti* (from Daramdin, Sikkim), and straw (from Siliguri).

The promotion of dairy farming in the village has reduced the number of forest dwellers (60%), since this percentage of forest dwellers are engaged in milk transport, sale, diary management, etc., ultimately managing fodder at household levels. The local biodiversity of the region is conserved, thereby reviving the traditional ancestral profession of animal rearing, which is a potential sector of income Mr Phurtenzee Sherpa (a National Awardee on dairy farming is based in the same locality only). Further, the farmers have maintained health and wellness status

good through consuming animal products and carrying out farming practices, thus increasing their skill and capacity of animal farming, and preventing further out-migration of village youths for the search of jobs overseas. This has in ahead grown the livestock capital in the village. Also, during road blockage, the local community prepares milk products (i.e., butter, cheese, etc.) for selling out at the local level.

Discussions and voices were held on managing fodder as per the local climate, and also on introducing improved local as well improved goat breeds viz., Angora (already introduced in Sikkim), Black Bengal, etc. Although the decades of independence, and even after the launching of diary improvement schemes of the government, farmers were following the traditional way of livestock rearing without practical knowledge and awareness. Community people and concerned government officials are aware and conscious when every first-of-its-kind training is organized in Ribdi-Bhareng. Furthermore, after the training is conducted, various issues such as cow disease, quantity and quality of milk, the gap between the line departments and livestock owners, lack of awareness and capacity building programmes, lesser attention on managing cowsheds, lack of nutrition-rich fodder species and feed, etc., were deeply analyzed and understood, discussed, and decided to continuously follow up for further improvement and creating local champion on dairy farming.



## Landscape Initiative for Far Eastern Himalayas

### Promoting Adventure Tourism in HI-LIFE Area – A success story

#### हाई-लाइफ क्षेत्र में साहसिक पर्यटन को बढ़ावा देना - एक सफलता की कहानी

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सुदूर-पूर्वी हिमालय के लिए परिटुस्वा पहल (HI-LIFE) के तहत, GBPNIHE ने नमदाफा राष्ट्रीय उद्यान / बाघ संरक्षित क्षेत्र के बफर ज़ोन में दो चयनित गाँवों में पाँच होमस्टे का निर्माण करके एक स्व-टिकाऊ पर्यावरण-पर्यटन मॉडल विकसित करने का प्रयास किया है। एक स्व-सहायता समूह को दो नदी राफ्टिंग नाव, दो मछली पकड़ने की छड़ें और अन्य आवश्यक वस्तुएं वितरित की गईं, जिससे इन होमस्टे में अधिक से अधिक पर्यटकों के आने में सुविधा होगी। यह समग्र पारिस्थितिकी पर्यटन तंत्र स्थानीय लोगों के लिए रोजगार भी पैदा करेगा।

The Landscape Initiative for Far-Eastern Himalaya (HI-LIFE) is one of the six trans-boundary landscape programmes initiated in the Hindu Kush Himalaya (HKH) region. It aims to promote regional collaboration among China, India, and Myanmar to address the various trans-boundary issues and challenges facing conservation and development in the landscape to achieve twin objectives, i.e., biodiversity conservation and sustainable development. In India, the HI-LIFE project that started in 2018 is primarily working towards potential growth and development of Eco-tourism in and around the buffer zone of Namdapha National Park/Tiger Reserve. The park that lies (27°23'30"- 27°39'40" N, 96°15'2"-96°58'33" E) in the eastern Himalayan region of Arunachal Pradesh has a vast recreational value to offer. With a huge floral and faunal diversity, mesmerizing landscape, birding etc.; there is a potential to connect wilderness with satisfactory refreshment for visitors/tourists. Moreover, ecotourism a form of sustainable tourism, directly benefits the economy and livelihood upliftment of local communities by becoming an alternative source of income. Keeping this concept in perspective, the NERC, GBPNIHE constructed five homestays in two selected villages viz. M'Pen II (8<sup>th</sup> mile) (2 nos.) and Lama village (3 nos.) that lies in the buffer zone area of the park along with proper running water facility and basic requirements necessary for the comfortable stay of tourists [Fig.1 (A-D)] that are in functional mode. Towards further strengthening of

ecotourism in the area; beneficiaries were selected and SHGs (2 nos.) were formed for River Rafting and Angling. The selected beneficiaries were then distributed with two river rafting boats (M'Pen II) and two angling rods (Lama village) along with required accessories in presence of the Tourism Information Officer (TIO) of Miao circle and SEACOW (NGO partner) members [Fig.2 (A-D)]. Four members from the River Rafting group were then selected and after proper medical screening were provided professional training on basic and intermediate white-water rafting for 22 days under the National Institute of Mountaineering and Allied Sports (NIMAS), Dirang, Arunachal Pradesh [Fig.3(A-B)]. This training was given for tourists' safety and to avoid mishaps during the rafting expedition in Noa-Dehing River. The step taken up by the institute towards introducing River Rafting in the project site was highly appreciated and looked upon by the Tourism Department, Government of Arunachal Pradesh. Creating an ecotourism model and additional river rafting and angling facilities in the area is a significant achievement for the HI-LIFE project as the local administration has recently realized and strengthened adventure tourism by leasing four more rafting boats to local Tours and Travels (Miaopam Tours and Travels) operator for their operational purposes in the same village [Fig.4 (A-B)]. This overall ecotourism model shall generate employment for the local youths and attract more tourists to the area.





Fig.1 (A-D): Development of Homestays with related facilities



Fig.2 (A-D): Promoting Sports Tourism under HI-LIFE project, India



## संयोजक संस्थान

गोविन्द बल्लभ पन्त राष्ट्रीय हिमालयी पर्यावरण संस्थान की स्थापना सन 1988-99 में पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय भारत सरकार के स्वायत्तशासी संस्थान के रूप में की गयी। यह संस्थान संपूर्ण भारतीय हिमालय क्षेत्र में वैज्ञानिक ज्ञान को बढ़ावा देने, एकीकृत प्रबंधन रणनीति बनाने व उनके प्राकृतिक संसाधनों के संरक्षण में प्रभाविता के प्रदर्शन और पर्यावरणीय दृष्टि से मजबूत प्रबंधन हेतु मुख्य संस्थान के रूप में चिन्हित है।

## Coordinating Institute

G. B. Pant National Institute of Himalayan Environment was established in 1988-89 as an autonomous institute of Ministry of Environment, Forest & Climate Change (MoEF & CC), Government of India. The institute has been identified as focal agency to advance scientific knowledge, evolve integrated management strategies, demonstrate their efficacy or conservation of natural resources, and ensure environmentally sound management in the entire Indian Himalayan region (IHR).



गोविन्द बल्लभ पन्त राष्ट्रीय हिमालयी पर्यावरण संस्थान

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THE MOUNTAIN INSTITUTE

