



e-Newsletter



Proceedings of the State level consultation Workshop

“Identifying Priority Thematic Areas – Arunachal Pradesh”

Under

Himalayan Knowledge Network (HKN) Project - Bridging Science, Policy and Practice to foster Sustainable Development in the Indian Himalayan Region

(24 – 25th Feb., 2021)



G.B. Pant National Institute of Himalayan Environment (GBPNIHE)

**(An autonomous Institute of Ministry of Environment, Forest & Climate Change, Govt. of India
North East Regional Centre, Itanagar, Arunachal Pradesh)**

About the HKN project

Himalayan Knowledge Network (HKN) has been conceptualized to enhance collaboration and networking among all relevant institutions engaged with Himalaya specific R&D leading to environmental conservation and sustainable development practices. HKN aims to develop an effective network to share ideas, resources and knowledge that will promote 'Science-Society-Practice' links across IHR states. The objectives of the project are: 1. To foster an effective and collaborative network of different constituencies, academic institutions & universities working within and outside of the IHR for sustainable mountain development. 2. Bring together academicians, researchers, and leaders through HKN forum for sharing quality knowledge. 3. To transfer evidence - based knowledge and expertise in the key sectors into policies and practices in the IHR.

About the NERC

The North-East Regional Centre (NERC) was set up in the year 1989 and started functioning from Chuchuyimlang, Mokokchung in Nagaland. In 1997, it was shifted to Itanagar, Arunachal Pradesh and since then, the Centre has been meaningfully contributing to the cause of conservation and development of the entire NE region, which is known for its rich diversity, be it biological, socio-cultural, linguistic or ethnic focusing on identified priorities such as:

1. People-centered land use models for shifting cultivation areas,
2. Indigenous knowledge systems and natural resource management options for tribal communities,
3. Biodiversity conservation and integrated development,
4. Appropriate low-cost technologies for improved livelihood and
5. Environmental assessment of developmental initiatives in NE region.

About the APSCS&T

Arunachal Pradesh State Council for Science & Technology (APSCS&T) was established in the year 1992 to cater to the need of Science & Technological requirements of the state and to advise government on policies and measures necessary to promote utilization of Science and Technology for achieving the socio-economic objectives of the state. Since 1995 onwards, APSCS&T have been playing catalytic role with the basic objectives for promoting application of science & technology for proper utilization of natural resources, mapping, documentation and development of Indigenous Knowledge System (IKS), replication of technologies and popularization and communication of science & technology etc. for development of human skill in rural areas and creating scientific awareness among the mass people of the state.

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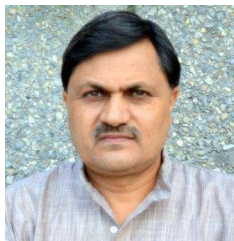
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From the Director's Desk



It is my great pleasure to share this special e-Newsletter published by North-East Regional Centre (NERC) of the institute as an outcome of the State level Consultation Workshop organized as part of the 'Himalayan Knowledge Network (HKN) - Bridging Science, Policy and practice to foster Sustainable Development in the Indian Himalayan Region (IHR)' Project in the state of Arunachal Pradesh. The workshop was organized to identify priority thematic areas for data access and sharing among different organizations for research and sustainable development of the state.

For holistic development in the region, certain areas/sectors that require immediate intervention need to be prioritized and the available information on these areas, including research needs and gaps be collated. This workshop gathered the experts in diverse fields from across the state and facilitated the deliberations on the given thematic areas including water resources, biodiversity, rural development, agriculture and climate change. This e-Newsletter contains the views of all the invited experts present during the workshop on different Thematic areas and the prioritized areas identified. The experts also expressed the need for convergence of activities among the organizations to take collective action towards sustainable development of the state and region as a whole. The next step after this Workshop is publication of a document on the identified thematic areas which will be a joint effort by all the participating institutions.

(Er. Kireet Kumar)

Proceedings of the State level consultation Workshop on “Identifying Priority Thematic areas of the state”

under

Himalayan Knowledge Network (HKN) Project – Bridging Science, Policy and practice to foster Sustainable Development in the Indian Himalayan Region (IHR)

(Date: February 24-25, 2021)

Background

The State Level Consultation Workshops were organized jointly by GBPNIHE-NERC, Itanagar and Arunachal Pradesh State Council for Science & Technology under the project entitled ‘*Himalayan Knowledge Network (HKN) - Bridging Science, Policy and practice to foster Sustainable Development in the Indian Himalayan Region (IHR)*’ for “Identifying Priority thematic areas of the state” on 24th and 25th February, 2021. Altogether 35 participants from different line department of the state attended the Workshop and presented their views and inputs on the outlined thematic areas. In addition to officials and staff of the organizing Institutes (GBPNIHE-NERC and APSCS&T), representatives from SIRD & PR, Soil & Water Conservation Department, Department of Horticulture, Department of Town and Urban Planning, Dept of Economics & Statistics, Department of Environment & Forest, Botanical Survey of India-APRC, Zoological Survey of India-APRC, Rajiv Gandhi University, Dera Natung Govt. College, Itanagar, State Remote Sensing Application Centre.

Inaugural Session:



At the outset, **Er. M.S. Lodhi**, Scientist – E & Head, North-East Regional Centre of G.B. Pant National Institute of Himalayan Environment welcomed all the participants who have taken out time of their busy schedule to attend the Workshop. Er. Lodhi, gave a brief introduction about the project and said that the main objective

of conducting the state level consultation workshop was to identify important ‘Thematic Areas’ which should be addressed for the sustainable development of the state. While briefing the stakeholders about the background, objectives and expected outcomes, he said that The HKN project is basically a knowledge generation project aiming to facilitate data access and sharing among organizations working in various thematic areas of the IHR. He emphasized a lot of research and development works has been done by various state and central government institutions, line departments and research Institutes and a lot of information is already available. Therefore, under the HKN project the existing information available with the different stakeholders will be accumulated and for identifying data gaps, future research priorities and policy implications.

Opening remarks:



Shri. C.D. Mungyak, Director-cum-Member Secretary, Arunachal Pradesh State Council for Science & Technology, GoAP gave the Opening remarks for the

workshop. C.D. Mungyak said the Council feels privileged to be a partner in the HKN project as the State chapter for the state of Arunachal Pradesh. He highlighted the collaborative projects/programmes that the APSCST is involved in with various reputed institutions at CSIR-NEIST (Rural Technology demonstration), Bombay IIT (Renewable energy), AAU (bio resources), etc.

C.D. Mungyak expressed concern that various institutes are working in isolation mode and there is almost no interaction or sharing of knowledge and facilities among the organizations. Therefore, he stressed on the importance of the HKN project in bringing together different institutions and stakeholders working in the field of science and technology to improve collaboration, data sharing and avoid duplication of research work. Finally, he urged all participants to share their knowledge and experience in their respective fields and together will come up with suitable suggestions and concrete mechanism to sort out the gap and shortcomings in the identified thematic areas.

Discussions and Knowledge Sharing:

1. WATER RESOURCES:



Mrs. Nido D. Pubiyang,
Soil Conservation Officer,
Directorate of Soil &
Water Conservation,
RWD, GoAP highlighted
the works undertaken by
the department in the
field of soil and water
conservation, watershed

management, spring shed management & rejuvenation of drying springs. Mrs. Pubiyang expressed concern about the unavailability and inaccessibility of data of the academic and research institutes in the state. She further added that it is pertinent to take up research for development of Spring atlas and spring inventories for every District and villages of the state. She also suggested to carry out research studies on soil erosion, land degradation, groundwater depletion and recharge techniques, stream bank erosion, mechanism to mitigate landslide etc in Arunachal context. She also informed that the meteorological stations earlier installed in every district of the State by the Department need to be revived and revamped for generating accurate and real time climate data which will be helpful for planning of various projects of all line departments.



Dr. Swapna Acharjee,
Scientist from State
Remote Sensing
Application Centre
(SRSAC), Department of
Science and Technology
(DST), Govt. of

Arunachal Pradesh (GoAP) informed about the data available at SRSAC under "Rajiv Gandhi National Drinking Water Mission" project of National Remote Sensing Centre, ISRO, DoS, Govt. of India. The Ground Water Prospect and Quality Maps of Arunachal Pradesh on 1:50K scale completed by SRSAC are available in the BHUVAN-BHUJAL PORTAL (Ground Water Prospects and Quality Information System) which is a web based utility that allows users to explore the thematic maps. The Ground Water Prospect Maps of Arunachal Pradesh are shared with the Public Health and Engineering Department, Govt. of Arunachal Pradesh as GeoPDF and are being extensively used for ground water development. She added that under the "Monitoring Snow and Glaciers in the Himalayan Region" Project of the Space Application Centre, ISRO, DoS, Govt. of India, snow cover monitoring has been completed for the three sub-basins namely Dibang, Tawang and Subansiri of Brahmaputra Basin for the hydrological cycle (October-June) and generated composite snow cover data for 10 years (2004-2014). Other important thematic maps for Water Resources sector available at SRSAC are Wetland map of Arunachal Pradesh, River/Stream network map of Arunachal Pradesh, etc. on 1:50K scale. Further she informed that the information on Land use/Land cover of Arunachal Pradesh, Land Degradation status of Arunachal Pradesh and Wastelands of Arunachal Pradesh on 1:50K scale, completed by SRSAC, are also uploaded in the BHUVAN PORTAL under thematic services section. All the above thematic information in the form of maps (PDF/JPEG/PNG format) and data are shared with researchers, Govt. Agencies and policy makers for Water Resources and Land Resources Developmental plan for the State.

Weblinks:

<https://bhuvan-app1.nrsc.gov.in/gwis/gwis.php>
<https://bhuvan-app1.nrsc.gov.in/thematic/thematic/index.php>
<https://bhuvan-app1.nrsc.gov.in/state/AR>

2. AGRICULTURE:



Shri. T.T. Dagiyo, HDO Department of Horticulture, GoAP told that from his first-hand experience, he has seen many streams and springs that have dried up in present days due to deforestation, shifting

cultivation and other anthropogenic activities at the catchment areas. Therefore, he suggested that research institutions should take help of local community organizations such as Gram Panchayats to identify and map such dried-up springs in different areas of the state. Further, he informed that there are many government schemes available for implementation of water conservation and management programmes. He also suggested that the government should come up with specific Guidelines for implementation of schemes on stream & spring conservation in important watershed areas and selection of beneficiaries on need basis. Mapping of weather stations installed in the state by different departments.

The expert from Department of Agriculture also shared his opinion on the concern raised by participants on increasing commercialization of agriculture and plantation of cash crop such as large cardamom and kiwi fruit, in the state, leading to loss or reduction in cultivation of local or indigenous species. He said that these crops are important for the economic benefit of the people of the state. Any conservation planning cannot sustain without considering the economic development of the people. Similarly, if agriculture is kept at the center of development it will not threaten the biodiversity if it is implemented in a sustainable way. Therefore, there should be a judicious choice of species

which are suitable for the climatic condition and will not compete with indigenous species.

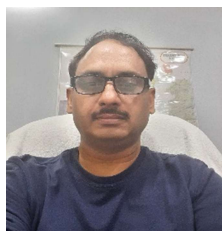
3. FORESTRY/FORREST RESOURCES



Dr. B.B. Bhatt, Research Officer Department of Environment & Forest, GoAP, gave a brief presentation on the

diversity of forest types and forest resources, including many rare, threatened and endemic species in the state including wild mushrooms, bamboo and canes, wild cats, Mishmi takin, etc. He suggested that all the species need to be conserved while the main R & D need in this sector is conservation of habitat and restoration of degraded habitats. Priority species for conservation were Tiger, Hornbill, golden mahseer. He also emphasized the importance of community participation for successful implementation of conservation programs.

4. BIODIVERSITY



Dr. Narender Sharma, Officer Incharge and Scientist-E, Zoological Survey of India, Arunachal Pradesh Regional Centre (APRC), Itanagar gave a brief

introduction about the works done by ZSI in documentation of the faunal diversity of the state. He told that so far research work is mostly on vertebrate groups while there is not much work on invertebrates. He highlighted the research gaps in faunal diversity research which include – Invertebrate groups, Bryozoa, Protozoa, Mollusca among others. He further said there is need for faunal studies in protected areas such as National Parks/Wildlife Sanctuary/Community Reserves.



Dr. Umesh Kumar Tiwari, Scientist Botanical Survey of India, Arunachal Pradesh Regional Centre (APRC) gave a brief presentation on the floral diversity of Arunachal

Pradesh. He highlighted the works done by BSI preparation of flora for every district of the state and the published floras are available with the BSI headquarter for sale. Floral diversity of the state is threatened by Habitat fragmentation, introduction of non-native species, overexploitation of plants (illegally traded species such as *Paris polyphyla*), and loss of Traditional Knowledge. For documentation of both flora and fauna diversity, preparation of People's Biodiversity Register (PBR) is an important tool. However, care should be taken to check the accuracy/authenticity of data. He highlighted some research priorities related to impact of climate change on flora, such as phenology, species distribution. He also suggested the creation of nature trails in forested areas which can serve double purpose of conservation as well as income generation.

5. DEVELOPMENT ISSUES



Shri Leleen Regon, Asst. Director Department of Economics & Statistics, GoAP. He expressed the data collected by their dept. help other organization to effectively determine the causes of the problems.

Data allows organizations to visualize relationships between what is happening in different locations, departments, and systems. Hence, for planning any developmental work in the state the department relies on secondary data obtained from line departments/institutions. He expressed concern that data available is sometimes not authentic/reliable. He suggested that in order to formulate planning, real time and

primary data is required. Since the Department of Economics & Statistics is a databank for the whole state, therefore, he feels that the government should direct all the state departments to ensure that the data submitted should be authentic and in case any discrepancy is found in the data, the concerned departments may be asked for justification.



Shri Roehen Ruyi, Town Planning Assistant, Department of Town Planning and ULB's, informed about the works that the department is carrying on in planning of

several towns in the state, e.g., Pasighat, Ziro, Namsai. GIS based master plan including Tawang and Bomdila, reserved plantation area and green zone are incorporated in master plan area for recharge of underground water level and maintain natural water stream flows. They are also doing conservation-based activities at district level.

6. RURAL DEVELOPMENT:



Dr. V.K. Sharma, Director State Institute of Rural Development and Panchayati Raj (SIRD&PR), highlighted the works done by the department in the field of rural development and

capacity building in collaboration with the Gram Panchayats. He emphasized that rural development is not only concerned with works done by SIRD alone but encompasses works done by different departments in the rural areas, be it Forest Dept., PHE, etc. He suggested the need for a holistic approach and convergence of activities and resources among departments and integration of departments for attaining sustainable development. Harnessing the Social capital which already exists in the rural areas of the state would be beneficial not only for socio-economic development but also for conservation activities. He suggested to study the SHG model created by

State Rural Livelihood Mission (SRLM) to understand community participation, which he said is the best model so far.



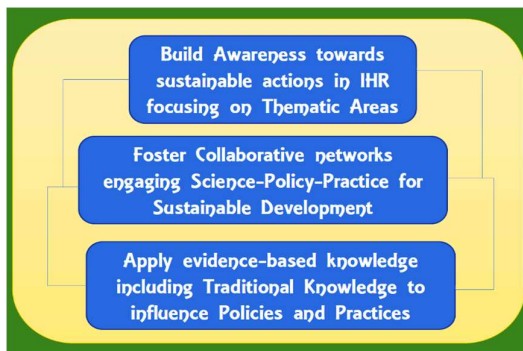
Dr. Ratna Tayeng, Asst. Prof & Head, Department of Anthropology, Dera Natung Govt. College, Itanagar suggested that R&D activities for development of rural areas could be made

more people centric by garnering community participation and prioritize the activities based on community need and aspirations following a bottom-up approach. He further emphasizes the importance of the local knowledge available with the communities in planning and implementation of development activities in rural areas.



Shri. Tamar Baki, IEC Nodal Officer cum State Level Master Trainer, Rural development Department. He emphasized on the Mission Antodaya and swachta Phakwada data apps under bhuvan mission

which were implemented by the Deptt. Of Rural Development. The data generated help in formulation of proposal and supporting vision document. With the help of this apps the department implement the real time value of the project in realistic.



CONSULTATION WITH NGOS



Shri Rajeev Nirmal, President National Youth Project (NYP) introduced about the NGO and its works among the youths. He suggested many areas which need attention for sustainable development.

These include, biodiversity and wildlife conservation, traditional knowledge of local societies and their livelihood, inventory and revival of springs, Himalayan glaciers and the associated hydrological consequences, sustainable tourism, Transformative approach to Shifting cultivation, strengthening skill & entrepreneurship and generating reliable data/information for informed decision making. He further said that to bring change in the state, it should start from the community level.



Shri L.P. Albert, AMYAA briefed about his NGO and its works in the state. He said that the NGO has been involved in a variety of fields related to livelihood, unemployment, child rights, etc. AMYAA

works to promote sustainable livelihood for local artisans, farmers, youth and women by setting by training cum production units in Handloom, Bamboo Handicrafts, Banana fiber extraction and food processing. He further added that they are working in collaboration with NABARD, NERCORMP (funded by North East Council) and Quest Alliance Trust for various activities. AMYAA has also initiated voluntary movement of I-Clean Roing basically with the idea of protecting mother nature by keeping the environment clean and green through weekly cleaning up of garbage within town area, planting of tree, creating awareness at both village and town, campaigning against one time use plastics, taking part at annual

Himalayan Clean Up which takes place on 26th May every year.

Shri Tailyang Tanio, Achukuru Welfare Society highlighted the works of the Society to take care of the orphans and old-age people in the state of Arunachal Pradesh, particularly in Ziro, Lower Sunbansiri District. The Society is also running a homestay and ecotourism facility which was established by GB Pant Institute under its projects. He further informed that now he has started work on conservation of ornamental fishes and is consulting with the state Fishery department for financial and knowledge support as well as market linkages.

Mr. Kakum Nabam, Cultural & Educational Development Society (NGO), told that the NGO worked for the last few years with the local people to convert unutilized land into banana cultivation. However, he expressed his disappointment that wild elephants were destroying the plantation leading to huge loss which ultimately led to discontinuation of banana cultivation in that area. He further requested the other experts to suggest solutions for this problem and help the local people.

Mr. Rongsa Tadar, Secretary Arunachal Gandhi Ashram talked about IOT based technology for implementation and monitoring of activities.

Shri Paplu Sarkar, Project Director M.M. Charitable Trust departments/ institutions. They

called for integration and convergence of activities to strengthen data access and sharing among line departments and organizations. Furthermore, the participants agreed on the idea for creation of a network of NGOs where all the NGOs working in the state can come together to share knowledge, experiences and act as support system for one another.

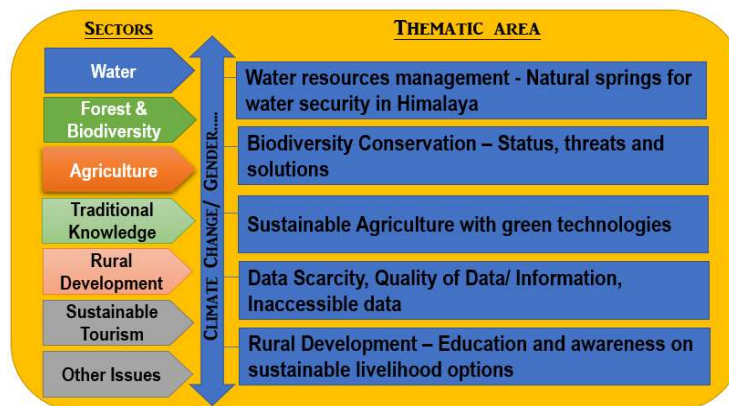
Way Forward

At the end, the invited experts and participants agreed that common issues with all the thematic areas are the lack of reliable or authentic data, inaccessibility of data available with different Climate change is a cross-cutting issue relevant to the other thematic areas which is affecting the phenology of plants, species distribution and migratory pattern of birds and animals. This issue of data unavailability can be resolved by networking projects like HKN to a great extent.

Vote of Thanks



Ms. Neelam Kuma, Scientific Officer and Nodal officer of HKN project from AP State Science & Technology Council thanked all the participants for sparing their valuable time for sharing their knowledge and helping in identifying the important priority thematic areas for the sustainable development of Arunachal Pradesh.



SUMMARY AND PRIORITIZATION OF MAJOR THEMATIC AREAS:

The 2-day's 'State Level Consultation Workshop' organized in collaboration with 'Arunachal Pradesh State Council for Science & Technology' (State Chapter under HKN) for "Identifying Priority thematic areas of the state" under Himalayan Knowledge Network (HKN) Project was attended by more than 40 expert representatives from various state departments, education and research institutes and NGOs. On the 1st day, all concerned departments and academic institutions working in the state were invited to participate whereas on 2nd day some of the NGOs working in the state were invited. Senior officials from departments like SIRD&PR, Soil & Water Conservation, Horticulture, Town and Urban Planning, Economics & Statistics, Environment & Forest, Botanical Survey of India, Zoological Survey of India, Dera Natung Govt. College, Itanagar, State Remote Sensing Application Centre etc. participated in the workshop. The workshop resulted in listing down major thematic areas which are important for Arunachal Pradesh (Table 1).

Table 1: Major thematic areas discussed during the consultation.

Thematic Areas	Cross-Cutting Themes
Forest and ecosystem	<ul style="list-style-type: none"> ➤ Climate Change ➤ Gender ➤ Disaster Risk Reduction ➤ Nature-based solutions ➤ Traditional knowledge
Water Resources – Rejuvenation of depleting water resources	
Biodiversity conservation	
Rural Development - Sustainable Livelihood and enterprise creation	
Shifting cultivation – Issues and options in present context	
Sustainable Agriculture -	
Wildlife Conservation with human-wildlife conflict issues	
Sustainable Development - Urban resilience and green infrastructure	
Clean energy – Sustainable development of hydro-electricity in Arunachal Pradesh	
Sustainable solid waste management	

During the workshop discussion on major thematic areas such as water resources, agriculture, forestry/forest resources, biodiversity, rural development, infrastructure developmental, climate change (as cross cutting theme) etc. and related issues were held. Water resources development, specifically the natural springs was identified as the top priority for the state as the state is facing rapid depletion of these natural springs in uphill areas. The lack of reliable or authentic data, inaccessibility of available data etc. were the common issues or gap areas related to almost all the thematic areas. Further, experts suggested that R&D activities could be made more people centric. Most of the experts stressed upon developing spring atlas for the state. Forest resource and biodiversity were identified as other important thematic areas for the state. Regarding biodiversity, experts expressed their concerns about non-availability of experienced taxonomists in the state both for flora and fauna. Among these, 2 top priority thematic areas were identified as (i) Water resources – rejuvenation of depleting water resources; (ii) Biodiversity Conservation.



Himalayan Knowledge Network: Bridging Science, Policy & Practice to Foster Sustainable Development in the Indian Himalayan Region



The Indian Himalayan Region (IHR) extends to 11 states (09 fully and 02 partially - hilly districts of Assam, and West Bengal) and 02 Union Territories (Jammu & Kashmir and Ladakh). The region comprises about 4% of the total India's population (48.6 million), 16.2% of the total geographical area (5,33,604 km²), 30% of the total ethnic group's (170), 36% of the total forest cover (2,50,708 km²), 44% of the total biodiversity, 63% of the total waterflow budget and 100% of the alpine & glacial systems of India. The Himalaya is also known as the 'Third Pole' - the water tower of south Asia. Mountains have not received enough attention despite of being an asset for food and agro-diversity, water and glaciers, carbon sink value, cultural and biological diversity and ecosystem services. Thus, Himalaya is at the crossroads of environment change and sustainable development. The IHR is also rich in human resources and expertise in various sectors of environment & development having 145 universities (Central-15, State-59, Deemed-5, and Private-66) and over 2000 faculty and 500 scientists.

So far, the information generated through various R&D activities/ projects by the different organizations in the IHR remain scattered and fragmentary. The lack of data sharing among different stakeholders need to be countered with innovative and effective ways of knowledge documentation, creation, dissemination and, finally its sharing for the welfare of mountain inhabitants and other end-users. To address these critical issues, there is a need to foster collaboration and networking among scientists, policymakers and practitioners, leading to improved convergence and synergistic actions in a holistic and integrated manner that sets the pace of informed decision making for reconciling conservation and development actions in the IHR. This has necessitated the need for a Himalayan Knowledge Network (HKN) - a centralized system for data/ information management for IHR. Realizing the gravity of this issue the NITI Aayog, Govt. of India has identified GBP-NIHE as a Centralized Data Management Agency (CDMA) recently. The HKN can facilitate the documentation, integration and collation of knowledge and cater to the need of State Govt. and other agencies aiming at sustainable development of Himalayan mountains. The project envisages to establish a State Chapter in each of the IHR States / UTs with a nodal person nominated by partnering agency of the State (preferably S&T Council).

The North-east Regional Centre (NERC) of GBPNIHE has been entrusted to take care of four NE States namely, Arunachal Pradesh, Nagaland, Mizoram and Manipur. Already a LoA has been signed with A.P. State Council for S&T, Itanagar for establishment of State Chapter and publishing two Thematic documents on priority area of A.P. after state-level stakeholder's consultations. I extend my heartfelt greetings to Er. M.S. Lodhi, Head, North-east Regional Centre and the Faculty of NERC for accomplishing this ambitious task in the stipulated time.

(G.C.S. Negi)

Scientist G & PI, HKN Project