



Department of Science and Technology
Ministry of Science and Technology
Government of India

NMSHE NATIONAL MISSION FOR
SUSTAINING THE HIMALAYAN
ECOSYSTEM



State Climate Change Cell, Manipur

Directorate of Environment
Government of Manipur

মহাৰাজ্যৰ ৰাজ্যিক জলবায়ুৰ State Climate Change Cell, Manipur NEWSLETTER

VOL. 3 | ISSUE 2 | APR-JUNE 2017



cover story

Shirui Lily Festival : Connecting people to nature

"The habitat of Shirui Lily is optimal under certain climatic conditions of low temperature, high wind speed..."

page 2-3

Phayeng Project : An initiative on climate adaptation at Phayeng Village

"An integrated approach is introduced by facilitating proper irrigation facilities, rain water harvesting practices, modernization of agriculture..."

page 4

Lead Story

Shirui Lily Festival : Connecting people to nature

“The habitat of Shirui Lily is optimal under certain climatic conditions of low temperature, high wind speed and snowy in winter.”

- Dr. Vino Raman

For the first time in Manipur, a five-day long Shirui Lily Festival was celebrated at the State level from 16th to 20th of May 2017. The festival was being sponsored by the Department of Tourism, Manipur and organized by the Shirui Lily Festival Organizing Committee. Manipur Tourism aimed to spread awareness about the endangered Shirui Lily and promote the district of Ukhrul as a must-visit tourist destination in Manipur through this festival. Shirui Lily festival offers a platform to promote peace and harmony among different communities of the state. Recognizing the importance of Shirui Lily as the State Flower of Manipur, the event is organized as a part of its efforts to develop and implement sustainable and responsible tourism in the State.

The festival featured demonstrations of the age-old traditions and culture of the Tangkhul Nagas of Ukhrul District. Folk songs and folk dances of different communities along with games and sports competition were showcased as some of the cultural items of the event. Camping, outdoor adventures and acoustic nights were major attractions of the event, along with varied food stalls selling indigenous cuisines and local drinks and flower shows displayed at the festival. The festival is being organized during the month of May keeping in mind the peak blooming season of the flower. Trekking programmes were also organized as a part of the event. Shirui festival goes in line with the theme of the World Environment Day 2017 'Connecting People to Nature'. The theme implores people to get outdoors and into nature, to appreciate its beauty and its importance, and to take forward the call to protect the Earth. It challenges us to find fun and exciting ways to experience and cherish the vital relationship between nature and mankind.

Discovered in 1946 by Frank Kingdom Ward, a botanist from United Kingdom, *Lilium Mackliniae* Sealy, which is locally known as Shirui Lily or Kashongwon is endemic to Shirui Kashong. The peak is situated at the elevation of 1,730 - 2,590 metres above sea level. The rare lily species is found growing naturally only in the upper portion of the Shirui hill ranges. The rising issues of global warming and climate change also impact the local flora and fauna of the region. The increase in temperature, changing rainfall patterns, soil erosion, forest fire, deforestation, illegal felling of tree, encroaching and intrusion of invasive species threatened the Shirui lily and other species of Shirui hills as well.

Acknowledging the values of Shirui Lily, the flower has been declared as the State Flower of Manipur on 20th March 1989. The positive move made by the Government of Manipur towards saving the Shirui lily through the observance of the festival is laudable. Hosting such festival helps the authorities take more proactive steps by putting in an effort to regenerate the greenery in the region. Furthermore, it instills the enthusiasm of preserving the rare species in the hearts of the people as a whole. Successful conservation measures necessitate active community participation and generous sacrifice on their part is crucial. Shirui villagers volunteering to donate village land for use in the works meant for protection of the endangered Shirui Lily is a heartening gesture.

On her address at the Shirui festival closing ceremony, Dr. Najma Heptulla, the Governor of Manipur has called for a sustained awareness campaign to ensure protection and survival of the Lily against the backdrop of global warming and change in habitat posing a threat to the survival of the rare flower. In fact, the impacts of climate change on the rare Lily are manifold. Some of the main changes vividly seen are in the height of the plant and the flower bearing capacity. Today, we see that the plant's average height has shortened to a great deal. In a booklet “Shirui at a glance” by Philazan Shangh Shimray, it is recorded that in the yester years, the height of the plant ranges from 1 foot to the extent of even 5 feet and it could bear as many as 15 flowers per plant.

Shirui Lily Festival 2017

A treat for the Adventure and nature lover

May 16-20, 2017

at Shirui Village & TNL Ground, Ukhrul Headquarter, Manipur

The number of flowers the plant could bear has now been reduced to less than half of what it was decades ago. When Forest Department officials visited the peak in June 2013; it was reported in 'The Sangai Express' that they witnessed the height of the Lily plant as short as six inches. Furthermore, it is found, that not only has the size of the Lily plants decreased, but the number of the Lily that bear flowers has gone down drastically. Changing ecology of the habitat and ever increasing global temperature has attributed to this phenomenon. The Shirui Kashong, the abode of different species of plants, animals and birds, according to one pastor, Rev Somi Kasomwoshi, has ceased to befriend with the Lily due to climate change and human's manipulative attitude.

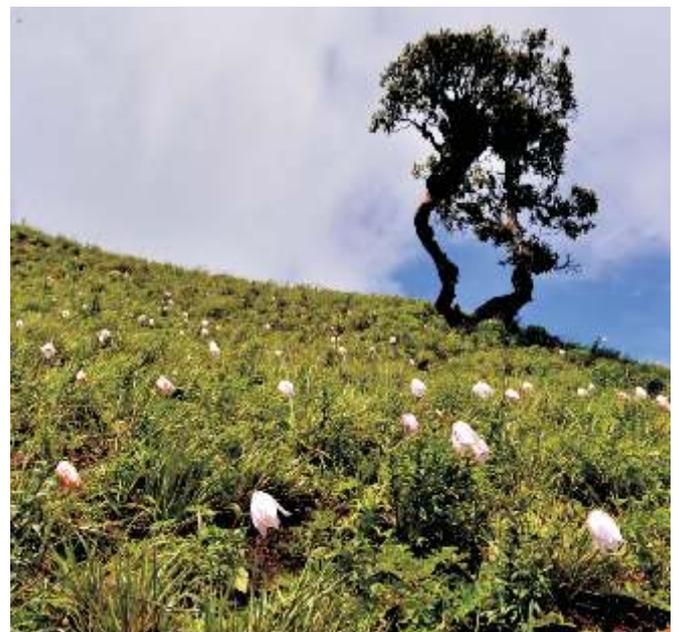
“increase in temperature, changing rainfall patterns, soil erosion, forest fire, deforestation, illegal felling of tree, encroaching and intrusion of invasive species threatened the Shirui lily and other species of Shirui hills as well.”

The habitat of Shirui Lily is optimal under certain climatic conditions of low temperature, high wind speed and snowfall in winter. The endemic flower is suited to the region of high altitudes where few trees mingle together with grasses and shrubs. It has now come to light that, the sustenance of the Lily is under severe threat due to the invasion of the dwarf bamboo grooves. Data related to wind speed and other climatic parameters in the Shirui range are not available prior to 2013. However it is observed by some folks who had trekked the peak frequently that the wind speed becoming much milder is so obvious even during the past few years time. Villagers also felt that the temperature has increased during the last few years with lesser frequency of snowfalls in the peak in winter. Moreover, the level of the snowfall has been decreasing and becoming more uncertain over the years. These changes in climatic condition not only disturb the habitat of the Lily but also create a more favourable condition for the dwarf bamboo to flourish. Given the bamboo's wild nature of expansion, the sustainability of the Lily is placed at a total risk. Prof. P Kumar Singh, Department of Life Sciences, Manipur University, once remarked that the natural process of sustaining Shirui Lily is beyond redemption and as such artificial measures remain the only option to save it from extinction.

The change in climate is also depicted in the rainfall pattern where uncertain and ill-timed downpour has become common rainfall features. Torrential rainfall followed by massive landslides in Shirui range in the last week of May 2017 is a clear example of extreme weather conditions. This caused enormous damage of roads, cutting off villages and creating much difficulty in transportation apart from destroying a number of agricultural lands. The rainstorm totally swept off the water reservoirs installed at the two main water sources of Shinguirakong and Kokthi Kong, including intake and collection chambers and pipeline structures. This led to a month-long disruption of drinking water supply to Ukhrul

Headquarter. Deforestation and jhum cultivation have had an adverse impact on the climatic condition at Shirui with the forest cover at Shirui Kashong decreasing rapidly. Excessive felling of trees is done mainly in the private-owned forest lands meant both for domestic and commercial purposes. The pressure of livelihood is the reason behind this activity which is a matter of great concern.

Under development is adversely associated with climate change. Economic insecurity of a region keeps the region more vulnerable to climate change and thus acts as the main drawbacks of combating climate change effects. Event such as the Shirui lily festival boosts the economic situation of the people living in and around Shirui village. This is witnessed in the form of various traditional items and cultural activities that attract the tourists. And yet, just as one Khoyumthem Brajesh Kumar has rightly pointed out in his article “Shirui Festival: Where is it heading”, there needs a well balanced strategy between tourism and conservation. Boosting tourism prospects at the expense of ecological damage would only lead to a disastrous end.



As a follow up of the Shirui Lily festival, an organization named 'Shirui Kashong Area Forest Land Owners Conservancy' (SKAFLOC) was formed to safeguard the deteriorating habitat and environment of Shirui Kashong. SKAFLOC comprised of more than 40 landowners who have dedicated their forest lands at the surrounding areas of Shirui Kashong. The members agreed to end the practice of felling trees, forest fire, hunting of wild animals and exploitation of minerals and medicinal herbs in the forest. Such step will have an influential and positive impact in addressing the environmental issues in the area.

Creating awareness on the need to protect, preserve and nurture the flower and the environment should be strived for. Sensitizing people living in and around Shirui Village on the significance of maintaining ecological balance can be quite meaningful. Making endless efforts to save the natural beauty for our future must remain an honourable but challenging task for the present generation.

Phayeng Project : An initiative on climate adaptation at Phayeng Village

“An integrated approach is introduced by facilitating proper irrigation facilities, rain water harvesting practices, modernization of agriculture with new techniques and changing of cropping pattern.”

- Yengkokpam Satyajit Singh

Governed by a mixed tradition of old and new culture, Phayeng village is situated at a picturesque location housed predominantly by schedule caste community. The western fringe of the village is guarded by a well preserved forest with different varieties of trees and plants. This ecosystem has much influence on the micro-climatic condition of the region. The current climate change issue has its share of impacts on this village. The stress due to the increasing population and rapid urbanization has developed certain strain on the existing ecosystem, thus making this village more vulnerable to any unwanted climatic outcomes. As such, this particular village in the Imphal West district of Manipur has been identified to be develop as a Carbon Positive Eco-Model Village so to enable adaptation to climate vulnerabilities.

Primary objective of the programme is to develop a model carbon positive eco village in the Himalayan Ecosystem blending traditional and modern adaptive practices to reduce vulnerability and enhance resilience for traditional livelihood. The overall objective of the project is to enhance the climate resilience of the community and their adaptive or coping capacity. The project applies an innovative method of resource conservation and eco-system based adaptation in the model village. While this project is implemented on a pilot scale, the same framework can be used for covering similar villages. At present, the villagers have experienced many types of climate anomaly. Rainfall has become totally erratic. The intensity of the rainfall has increased but the villagers feel that the number of rainy days has decreased over the years. The average day and night temperature are getting warmer during the summer months and as well as in the winter months.

The stress due to the increasing population and rapid urbanization has developed certain strain on the existing ecosystem, thus making this village more vulnerable to any unwanted climatic outcomes

To improve the livelihood of the villagers through sustainable ways is the core issue of the programme. As a result, sustainable agriculture has been initiated with the introduction of the system of rice intensification (SRI) and integrated pest and nutrient management. The practice of agriculture in the village is mostly mono-cropping which is mainly due to lack of irrigation and absence of modern technology. Through the project, an integrated approach is introduced by facilitating proper irrigation facilities, rain

water harvesting practices, modernization of agriculture with new techniques and changing of cropping pattern. Other activities like widening of the Maklang river and building of earthen dam along the channels and plantation in the command area will help in better recharge of water and enhance climate resilience with improvement of livelihood.

To effectively reduce the energy consumption and CO₂ emission in the Phayeng village, the streets are lighted with 300 solar lamps as of now. Capacity building and skill development of the villagers have also been enhanced by imparting training to a Self Help Group on juice making and marketing of the processed products. An automated weather station has been set up to collect information of various weather parameters such as rainfall, temperature, relative humidity, wind speed, etc. to provide round the clock weather information of the region. This will help in monitoring the changes in the micro-climate of the village which is likely to occur in the wake of climate change.

The project is a follow up action of Manipur State Action Plan on Climate Change. The activities of the project have been prioritized under Ecosystem, Bio-diversity and Sustainable Livelihood of the State Action Plan on Climate Change, Manipur. The success of the project will be measured by the adaptive capability of the people to climate vulnerabilities and replication of the Carbon Positive Eco-Model village project to other villages.



A comparison of photos, before and after the installation of solar lamps in Phayeng village

Weather Report

MONTHLY ANALYSIS OF MEAN MAXIMUM AND MINIMUM TEMPERATURE AND RAINFALL OF MANIPUR FOR THE 2nd QUARTER, 2017

| DISTRICT | APRIL 2017 | | | MAY 2017 | | | JUNE 2017 | | |
|---------------|---------------|---------------|----------------|---------------|---------------|----------------|---------------|---------------|----------------|
| | Max temp (°C) | Min temp (°C) | Total Rainfall | Max temp (°C) | Min temp (°C) | Total Rainfall | Max temp (°C) | Min temp (°C) | Total Rainfall |
| BISHNUPUR | 28.82 | 14.34 | NR | 28.77 | 22.5 | S | 28.75 | 23.83 | S |
| CHANDEL | 38.27 | 18.17 | D | 38.31 | 19.89 | E | 39.97 | 23.01 | E |
| CHURACHANDPUR | 32.08 | 12.58 | S | 32.95 | 15.27 | S | 28.91 | 17.42 | S |
| IMPHAL EAST | 34.1 | 14.61 | N | 35.64 | 17.29 | E | 36.18 | 20.42 | E |
| IMPHAL WEST | 32.59 | 12.96 | E | 33.84 | 15.21 | E | 34.96 | 19.7 | E |
| SENAPATI | 30.56 | 10.84 | E | 31.9 | 13.95 | E | 32.83 | 18.9 | D |
| TAMENGLONG | 34.23 | 14.32 | E | 36.38 | 16.74 | D | 39.1 | 20.68 | S |
| THOUBAL | 32.44 | 13.82 | S | 34.21 | 16.38 | E | 36.26 | 19.17 | E |
| UKHRUL | 24.65 | 8.74 | E | 25.98 | 6.07 | E | 26.64 | 14.04 | E |
| MEAN | 31.97 | 13.38 | | 33.11 | 15.92 | | 33.73 | 19.69 | |
| MANIPUR | AAN | BN | | AAN | BN | | AAN | BN | |

Source: State Climate Change Cell, Manipur, Directorate of Environment, Government of Manipur

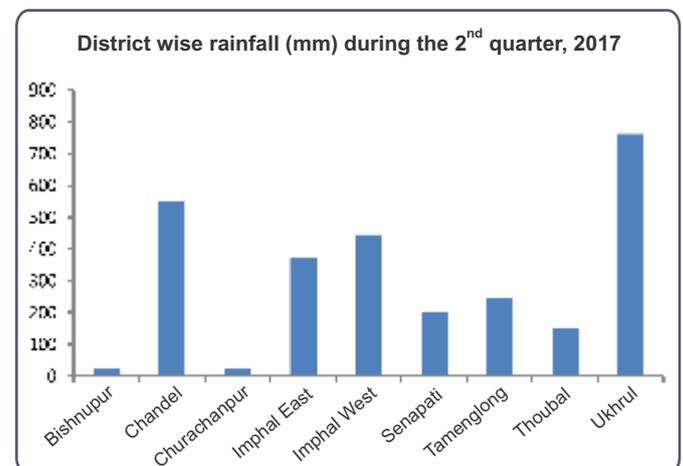
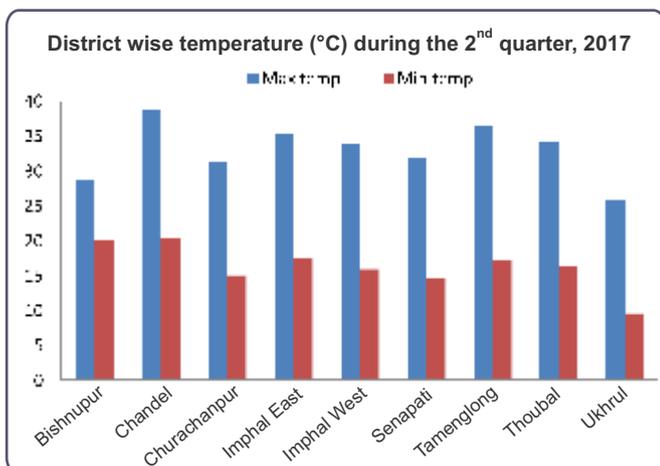
Note :

- N : Normal (N, N+1, N-1)°C
- * : Cold/Heat wave condition
- ** : Severe Cold/Heat wave condition
- BN : Below normal (N-2)°C
- AN : Above normal (N+2)°C
- ABN : Appreciably below normal (N-3, N-4)°C
- AAN : Appreciably above normal (N+3, N+4)°C

- MBN : Markedly below Normal (N-5 and Below)°C
- MAN : Markedly above Normal (N+5 and Above)°C
- E : Excess, (+20% or more of Mean rainfall)
- N : Normal, (+19% or -19% of Mean rainfall)
- D : Deficient, (-20% to -59% of Mean rainfall)
- S : Scanty, (-60% to -99% of Mean rainfall)
- NR : No rain, (-100% of Mean Rainfall)

The 2nd quarter of 2017 begin with heavy rain in some of the districts and the rain continued to lash out the whole quarter with flood occurring in many places of the valley region. During the month of May, excess amount of rain was received by six districts. Imphal West district and Ukhrul district received the highest rainfall during this quarter and on the other hand, Bishnupur district received no rain in the month of April and scanty rain in the consecutive months and this is followed by Churchandpur district, which received scanty rain during the entire quarter. Incessant rain in hill district have also caused mudslides and landslides in number of areas causing damage to properties.

The mean maximum temperature for the state of Manipur during this quarter is appreciably above normal. The station in Chandel district have recorded the maximum temperature for this quarter at 39.97 °C during the month of June. Ukhrul district always remain the coldest with the least temperature of 6.07 °C, 8.74 °C and 14.4 °C for the months of April, May and June respectively, as compared to other districts. The overall mean minimum temperature during this quarter is below normal. Much fluctuation in the temperature is also seen during this quarter since the topography of Manipur is diverse with valley and hills and the altitude ranges from around 700 to 2900 metres above mean sea level.



Source: State Climate Change Cell, Manipur, Directorate of Environment, Government of Manipur

— Analysed by Yengkokpam Satyajit Singh

TREE PLANTATION AT SENAPATI DISTRICT

- Apao Bunii



Plantation programme in process

In tune with the National Mission for Green India (GIM) which is one of the eight Missions outlined under the National Action Plan on Climate Change (NAPCC), the Poumai Naga Catholic Union (PNCM) organized a tree plantation programme at Houdu Koide Biisho on the 16th May 2017 where a number of tree saplings were planted.

Houdu Koide Biisho is located in Purul Tehsil of Senapati district in Manipur, India. It is situated at around 7 km from sub-district headquarter, Purul and 40km away from Senapati district headquarter. The average maximum temperature of the region is about 34 °C and the average minimum temperature is 3 °C. The average annual rainfall is around 1400 mm.

The programme also attempted to create a sense of responsibility towards resource protection and pollution free environment.

With an aim that all educational, social and religious organization must join to fight the environmental challenges and plant trees to save the life on earth from adverse climate change, Dr. Fr. K.O Sebastian, Principal of Don Bosco College, Maram, Brother Sunny Joseph, Director of Don Bosco Tech, Dimapur Centre, P.K. Saul Polah, President of PNCM, and hosts of other dignitaries along with the village elders came and participated in the tree plantations programme.

The main focus of the programme was not only to spread the

messages of green environment and sustainable development but also to restore and enhance forest cover in the region which may ultimately help the people to adapt and mitigate the adverse effect of climate change. Thus, tree bean (Yongchak – *Parkia speciosa*), Holly tree (*Ilex aquifolium*), pomegranate (*Punica granatum*) were planted to attain those missions.

The programme also attempted to create a sense of responsibility towards resource protection and pollution free environment. The importance of protecting the environment was thus exhorted on the occasion by various dignitaries. It envisages a holistic view of greening the area and to enrich biodiversity which may, in the long run, help in providing favourable climate, especially, for the farmers in the region.

With the tree plantation programme, foundation stone was also laid for constructing a vocational training centre of food processing and skill development in order to train the farmers towards preservation of agro products. The main aim was community capacity building for adapting to the adverse impact of climate change.

The objective of the centre is to provide short term courses where seminar and practical training will be conducted from time to time to some few volunteers, who will in due course, go back to their respective villages and impart the knowledge and skills to other farmers.

The place is a strategic point for the farmers because of the topographical feature which consists of large chunk of plain area, hills, and river basins and most importantly, it is close to national highway which will be easy to commute to the centre for both resource persons and the farmers from different villages.



People engaging in plantation work

Events

World Earth Day: Environmental and Climate literacy**- Ashem Rahul Singh & Dr. Bharati Brahmacharimayum**

World Earth Day is celebrated on 22nd April every year to raise awareness in restoring the natural environment and protecting it from further destruction. The World Earth Day was proposed at the UNESCO conference in 1969 and the first Earth Day celebrations took place in 1970 to promote the ecological diversity as well as to encourage awareness of the growing issues of environmental degradation, rate of industrialisation and the careless attitude of people towards the environment. It also led to the creation of United States Environmental Protection Agency, commonly known as the EPA, and the passage of landmark legislation including the Clean Air, Clean Water, and the Endangered Species Act. This year the theme for earth day is 'Environmental and climate literacy'. The theme is a call for action from the global community to address climate change, foster sustainable healthy environment, education and protect the planet for future generations.

The State, as observed worldwide, celebrated the World Earth Day at the Manipur State Film Development Society auditorium in a simple function organised by the Directorate of Environment in collaboration with the Forest Department. The function was graced by Th. Shyamkumar Singh, Minister of Forest and Environment, Govt. Of Manipur, Sushindro Singh, Parliamentary Secretary, Robindro Singh, Parliamentary Secretary, G. Tomba Sharma, Retired Principal, DM College of Science and Dr M. Homeshwor Singh, Director, Directorate of Environment, Government of Manipur.

In the welcome key note, Dr M Homeshor, Director, Directorate of Environment elaborated on the present climate change scenario and its effect on the environment. The frequent climatic outcomes such as floods and droughts, temperature rise and sudden rainfall effecting the natural environment as well as on human societies and economies could be cited as the impact of climate change. Resource person, G Tomba Sharma, retired Principal DM College, narrated the history related to World Earth Day and its observation in depth. He emphasised

upon the fact that only human being alone can save the planet.

The importance of protecting the environment and living harmoniously with nature was highlighted by L Sushindro, Parliamentary Secretary. Speaking at the function, the Chief Guest, Th Shyamkumar Minister of Forest and Environment, appealed to all the teachers and students to plant a tree each at their schools and home for conserving their surrounding environment. He also assured that the state government will take up various steps and measures to save and protect the forest and environment.

“a call for action from the global community to address climate change, foster sustainable healthy environment, education and protect the planet for future generations.”

The celebration of World Earth Day is to encourage youngsters, researchers, conservationists and literate people to increase awareness about the global issues of climate change in order to inspire action towards environmental protection. Educating the community about the environment and the necessity to preserve it will play a key role for the world to progress sustainably. We need to encourage the people to take up action against the degradation of the environment. It will be possible only when everyone is aware of the harmful impacts of the changes taking place around us. “Environmental and climate literacy is the engine not only for creating green voters and advancing environmental and climate laws and policies but also for accelerating green technologies and jobs in the present scenario. It is the right time to global citizenry fluent in the concepts of climate change and aware of its unprecedented threat to our planet- the earth” as stated by Kathleen Rogers, President of Earth Day Network have rightly explained the importance of this year's theme on environmental and climate literacy. Today the struggle for a clean, safe and sustainable environment amplifies to a huge extent as the havoc of climate change have increased manifold with each passing day. Now is the right time to safe our planet EARTH.



State Climate Change Cell, Manipur

The Climate Change Cell, Manipur of the Directorate of Environment, Government of Manipur is a unit for climate research extension and strategic knowledge network on climate information of the state. The Cell has been strengthened during October 2014 by the Department of Science and Technology, Ministry of Science and Technology, Government of India as one of the target activities of National Mission for Sustaining the Himalayan Ecosystem (NMSHE) under the National Action Plan on Climate Change (NAPCC).

| | |
|--------------------------------|--|
| The primary objective | <ul style="list-style-type: none">- To develop a resource base climate information network and sustainable capacity for continuous assessment of the ecosystem health so as to enable in policy formulation and implementation of climate sensitive activities in the state |
| The secondary objective | <ul style="list-style-type: none">- To develop a wider knowledge network for climate information;- To develop regional climate data base information management system and connectivity;- To enhance research activities on vulnerabilities of the impact of climate change;- To evaluate the climate sensitive policies and alternatives towards its sustainability;- To have more understanding and linking the traditional knowledge system to the climate sensitive activities in adaptation, mitigation and coping;- To build the capacity of local researchers, young scientists, planner, executers, communities, etc.;- To conduct awareness and trainings for better implementation of the climate sensitive actions;- To evaluate, monitor and update the existing State Action Plan of Climate Change. |
| The long term objective | <ul style="list-style-type: none">- To make position a viable and self-learning climate knowledge networking system to assist the policy and the state authorities in long run. |
| Goal | <ul style="list-style-type: none">- Strengthening capacities of the state government officials for effective planning and implementation of climate change adaptation actions;- Undertaking vulnerability assessment of the climate sensitive sectors;- Spreading awareness among the masses on climate change and its likely impacts. |
| Key deliverables | <ul style="list-style-type: none">- Networking and strengthening of regional climate knowledge institutions;- Development of observational network to monitor the health of the Eco-system;- Capacity building and trainings to the officials, planners, young scientists and community practitioners;- Development of State level Climate Information System;- Development of a log frame for effective implementation of climate sensitive action by integrating traditional knowledge and community based management system;- Develop the sectoral document of identified sectors under SAPCC (State Action Plan on climate Change). |



Please visit www.cccellmanipur.com