

# GREEN GOVERNANCE: POLICIES, PROGRAMMES AND VISION OF THE FORESTRY SECTOR OF SIKKIM

Sonam Topden Lachungpa, IFS

Over a period of 100 years of Forestry in Sikkim, several changes and improvements in the forestry sector have been observed. We must admire the vision of the then forest managers who demarcated the forest boundary effectively with the help of boundary pillars made of stone, some of which exist intact till date, and serve the purpose of forest demarcation even today. The credit goes to the far-sightedness of the Father of Forestry in Sikkim, Sidkeong Tulku. Today with the use of GPS and these old pillars, we are able to effectively carry out survey and demarcation of the forest areas. The forest sector has grown in terms of technology, improved staffing, new policies, comprehensive targets and achievements, networking and achieving global recognition in this new era of increased awareness on the importance of the Forest and Environment. An important change observed is scientific management of forest.

Yet despite the increased use of scientific technology and improved management, we now face greater challenges. Growing population pressure, climate change impacts, and developmental interventions cannot be avoided, but have to be controlled effectively in order to have a balanced environment for the benefit of all. Happiness Index of a person increases when a balance is achieved between the two. The State under the dynamic leadership of the Chief Minister, Shri Pawan Chamling has been able to usher in this pro-environmental development and the present article highlights the green governance policies, programs and strategy of the forestry sector of Sikkim. Now we see increasing international support to the forestry sector in terms of finance and expertise like the most recent Project SBFP funded by the Japanese Government to further strengthen the existing programmes of conservation and protection and at the same time benefit the local rural people of Sikkim.

Looking back at the History of Forestry in Sikkim certain achievements and observations have to be penned down, that should serve as a future reference for the new generation. Looking back at the History of Forestry in Sikkim certain achievements and observations have to be penned down, that should serve as a future reference for the new generation.

## 1909:

### ❖ Forest Department set up

Forest Department, which came into being in 1909, is one of the oldest Departments in the Government of Sikkim.

### ❖ Reserve and Goucharan forests surveyed and demarcated

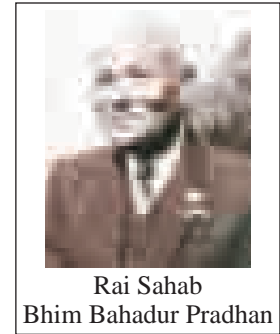
Since Sikkim was not directly under the British Colonial Regime, the administration and management of forests in Sikkim was under the Thikadars and Kazis who were the land lords and the second tier administrators below the Chogyal till 1947. Till 1947, Sikkim was divided into different zones and each zone was under the administrative and managerial control of Thikadars and Forest Department functioned in co-ordination with the Thikadars and Kazis who were controllers of the land in Sikkim. The Chogyal issued notification in 1905 to demarcate the area which were not occupied by the people, as Reserved Forest and issued specific order to the Kazis and Thikadars and people were not allowed to cultivate in the demarcated forest land. In 1911, small patches of forests located inside the villages and portion of forests which were in continuity with the demarcated reserved forests and located at the fringes of the villages were demarcated and declared as Khasmal Forests and Gaucharan Forests to meet the demand of the villagers for small timber and firewood and for grazing of their cattle respectively.

### ❖ Forest Manual, a statute book for department adopted for operationalization.

### ❖ Sidkeong Tulku, the then Crown Prince of Sikkim pioneered the step ably aided by Dillu Singh Ghale, the Bengal Forest Officer on deputation to Sikkim. Late Sidkeong Tulku, the 10<sup>th</sup> Chogyal of Sikkim is considered the father of Forestry in Sikkim. The concept of conservation and sustainable management of forest was evolved by him.

### 1919:

- ❖ Rai Sahab Bhim Bahadur Pradhan joins Forest Department in 1915 and after six years of service, he becomes the Forest Manager, a position he occupied for 31 years till his retirement in November 1956. He was a man with a mission to develop Sikkim through Agriculture, Floriculture, Horticulture and Forests to which he dedicated his entire career. A large number of forestry notifications which are relevant even today speak volumes of his foresightedness.



### 1930:

- ❖ German scientist Ernst Schaefer expedition to Sikkim and identification of SHAPI or Himalayan Tahr at Phimpfu, North Sikkim as distinct variety; advocacy for its total protection.

### 1945-46:

- ❖ Forests vested to the Darbar from the ownership of landlords in different districts, a task ably implemented by Atal Singh Dewan, Range Officer.

### 1952:

- ❖ **First Cadastral survey to demarcate Revenue and Forest Lands.**

The first cadastral survey of the land in Sikkim was done in 1952-53. The land area which was cultivated by individuals under their possession was recorded in their names and the area not under the possession of any individual was recorded as Reserved Forest, Khasmal and Gaucharan. The Chogyal Sir Tashi Namgyal was also conscious about the conservation of forest and protection. He issued a notification in 1959 ordering the citizens not to cut any tree on steep slope, bank of Jhora or Khola to avoid landslide and also in and around water holes. The villagers were encouraged to plant and grow trees. The concept of Silvicultural availability before cutting a tree was evolved by Chogyal Sir Tashi Namgyal. Only the tree which did not invite any danger in the near future was allowed to be felled, forest offenders were dealt with stringent action during the regime of Chogyal.

### 1972:

- ❖ Indian Peafowl introduced into lowland Sal forests, South Sikkim.

### 1975:

- ❖ In 1975 (16<sup>th</sup> May 1975) Sikkim a separate Kingdom erstwhile merged with India. By then, the Forest Department consisted of one CCF, one CF, three DFOs viz DFO East & North, DFP South & West, DFO Soil Conservation, about 6-7 Forest Rangers, around 15-16 Block Officers and about 25 Forest Guard. In 1975, four Gazetted Officers were appointed and sent for training in Indian Forest College, Dehradun. Similarly, four Range Officers and seven Block Officers and about 20 Forest Guards were appointed in 1975 to reinforce forest protection and management in the State.

### 1976:

- ❖ Extension of Indian Wildlife (Protection) Act 1972 to Sikkim.

### 1977:

- ❖ Khangchendzonga National Park (KNP) of area 850 sq. km. declared. The only National Park which exists today in Sikkim was declared in 1977, with an area of 850 sq.km located in Northern & Western part of Sikkim which was later increased to 1784 sq.km.

### 1980:

- ❖ Forest (Conservation) Act, 1980 was also implemented in Sikkim from 1980 to deal with the diversion of forest for non-forestry purpose i.e. for making room for development in the State.

### 1984:

- ❖ Kyongnosla Alpine Sanctuary and Fambong Lho Wildlife Sanctuary, East Sikkim; Shingba Rhododendron Sanctuary, North Sikkim declared.

**1987:**

- ❖ Maenam Wildlife Sanctuary at South Sikkim, declared.

**1988:**

- ❖ State formulates and adopts Sikkim Forests, Water Courses and Road Reserve (Preservation and Protection) Act, 1988. For protection of Forest, Indian Forest Act, 1927 was extended and implemented till 1988 wherein the Central Act was supplemented by Sikkim Forest, Water Courses and Road Reserve Protection (Preservation) Act, 1988 and amended in 2000.

**1988-89:**

- ❖ Forest Survey of India completes Forest Resource Survey of all districts of Sikkim.



Pictures (above) - IGF Mr. Srivastava and his team during visit to Sikkim in 1976



Snapshot of Forest workers from old diary

### 1995:

- ❖ Sikkim Government announces 1995-96 as “*Harit Kranti*” year for greening Sikkim through people's participation and also adopts the ten years period from 2000-2010 as “*Harit Kranti Dashak*”.

- ❖ **Sikkim Government imposes ban on Green Felling in Forests**

Felling of trees in Reserve Forests has been restricted and export of timber outside the state has been banned. Tree felling rules for private holding has also been framed and implemented. Only dead, dying and diseased trees allowed to be removed for the bona fide use. The State Government took up the task to protect the existing natural forests and to bring the degraded forests and agricultural fallows under afforestation since 1995. **The positive response of the people has led to the increase of forest cover in the State.** The **total ban on green felling** for commercial purposes and the defense of this philosophy for over a decade has made our forests in terms of character and composition, an envy of our neighbors. Needless therefore, to mention that planners, scientists and advisors are increasingly of the view that Sikkim is eligible to claim carbon sequestration cost for amelioration of regional climatic conditions by retaining and regenerating forest cover. **Forest protection, wildlife conservation and maintenance of environmental fabric** in the hills of Sikkim have been the prime focus of the Government over the last several years. Legislations, rules and guidelines have either been put in place or revised and amended to make them more stringent. The following rules /notifications deserve special mention:

- ***Amendment of Sikkim Forests, Water Courses and Road Reserves (Preservation and Protection) Act, 1988:***

The State Government has brought about vital amendments in the present Sikkim Forest Water Courses and Road Reserve (Preservation and Protection) Act, 1988 (Amendment 2000) to make the specified clause more stringent and harsh in enforcement. Offences such as illegal felling of trees, encroachment and grazing in the Reserve Forest have been made non-bailable. Other important initiatives, measures and actions taken are Intensification of Management & Protection, The overall management of forest land and forestry resources have been intensified by better patrolling, effective forest check posts, check on illegal extraction and transit of forest produce, reporting and recording of all forests offences and other information in Head quarter control room and Division control rooms, registration of forest cases, check on leakage of forest revenue and better communication system.

- **The Sikkim Forests (Compounding of Offences) Rules, 1998**

This rule notified by the government is to make strict rules for offender who commits any forest offence. Thereby keep a check on the offenders for violating the rules.

- The Sikkim Transit of Timber and other Forest Produce Rules, 1999.
- The Sikkim Forest (Detection, Enquiry and Disposal of Forest Offences) Rules, 2002
- The Sikkim Forest Department Reward Rules, 1998
- The Sikkim Forests Cattle Tress Pass Rules, 2000
- The Sikkim Private and Other Non-Forest Lands .Tree Felling Rules, 2006
- The Sikkim Forest (Allotment of Areas for Quarrying of Sand and Stone) Rules, 2006.



Broad-leaved Forest, Melli, South Sikkim

**1997:**

- ❖ By legislation, banned the use of non-biodegradable materials like plastics, poly-bags, and Bio-medical / chemical waste.
- ❖ Khangchendzonga National Park (KNP) extended from 850 to 1784 sq. km. (25.10% of total geographical area).

**1998:**

❖ **Sikkim Government imposes ban on cattle grazing in Reserve Forests**

In bold step taken by the government, Cattle grazing in Reserve Forests, an age-old practice that had led to depletion of forest wealth, banned. Two decades ago, Sikkim forests had witnessed rampant and large scale grazing in the mountainous region. The whole phenomena started from the mid twentieth century, when transborder Bhutia yak herders from eastern Nepal started migrating and settled in the border villages of West Sikkim adjacent to KNP. With the merger of Sikkim into India in 1975, rapid development created new

opportunities and markets. In order to meet the growing demand for dairy products, the herd size of the recently introduced pastoral systems like the yak and the cow yak crossbreeds started increasing. The increase in the cattle population resulted in the increased pressure on the fragile mountain eco-system.

History is thus proof to the rampant **traditional grazing practice** and the consequential deterioration to the endemic eco-system in Sikkim. In 1998 Government of Sikkim imposed ban on Grazing in reserved forest areas, plantation areas and water sources areas. This age old system of grazing was thrown over thus set the tone for umpteen numbers of follow-up policy and legal inroads that led to the forest floor becoming clear of this nuisance and menace.

The effects of which reflects its visibility in the recent years. Forests regenerating with natural succession, water-regime in the catchment areas improved, sick and dying lakes brimming with water, more water flowing down the streams and streamlets than before. Wildlife, avian-fauna and wilderness areas being better adapted



Cattle sheds (goth) in Barsey Rhododendron Sanctuary which have been now removed after the ban on Grazing

leading to increase in population on account of creating an ideal habitat for their living, breeding and propagating. All of these project a positive natural scenario that speaks of sustainability and viability of life support systems in the hills and valleys of Sikkim.



Cattle sheds (goth) in Barsey Rhododendron Sanctuary which have been now removed after the ban on grazing



In response to the ban on grazing and the increase in forest cover, an independent survey was conducted by a Noida based non-governmental organization 'Inscription' whose report has been published in Down-to-Earth magazine found Sikkim to rate the highest in Forest Protection Index among all States of India.

- ❖ State award “Rajya Van Samrakshan Evam Paryavaran Puraskar” constituted.
- ❖ Rathong Chu hydro-electric project and proposed firing range in North Sikkim, abandoned.
- ❖ Barsey Rhododendron Sanctuary, West Sikkim notified.
- ❖ Introduction of participatory forest management involving active peoples' participation through Joint Forest Management Committees (JFMCs) (26<sup>th</sup> June 1998). Seven Forest Development Agencies under Territorial and Wildlife Sectors with 158 Joint Forest management Committees covering 88518 ha. forest land and 49 Eco Development Committees have been constituted and are actively implementing the National Afforestation Programme.
- ❖ Subsequent notification issued for Eco-Development Committees (EDCs).



Barsey Rhododendron Sanctuary

1999:

- ❖ Shri Pawan Chamling, Chief Minister of Sikkim adjudged Greenest Chief Minister of India by Delhi-based Centre for Science and Environment.



Hon'ble Chief Minister, Shri Pawan Chamling planting a sapling

- ❖ Government adopts new nomenclature 'Forest, Environment and Wildlife Management Department' in tune with changing focus and shift in approach and objective.
- ❖ *Smriti Van* (Memorial Forests) concept by the Chief Minister at Bulbuley above Gangtok to take forestry programmes to people's level. All strata of people, individuals, institutions, clubs, societies and nongovernmental organizations participate by planting trees in memory of children, marriage, death etc. at a common venue and care, own and nurture trees to maturity. Smriti Vans now at each Panchayat Unit.

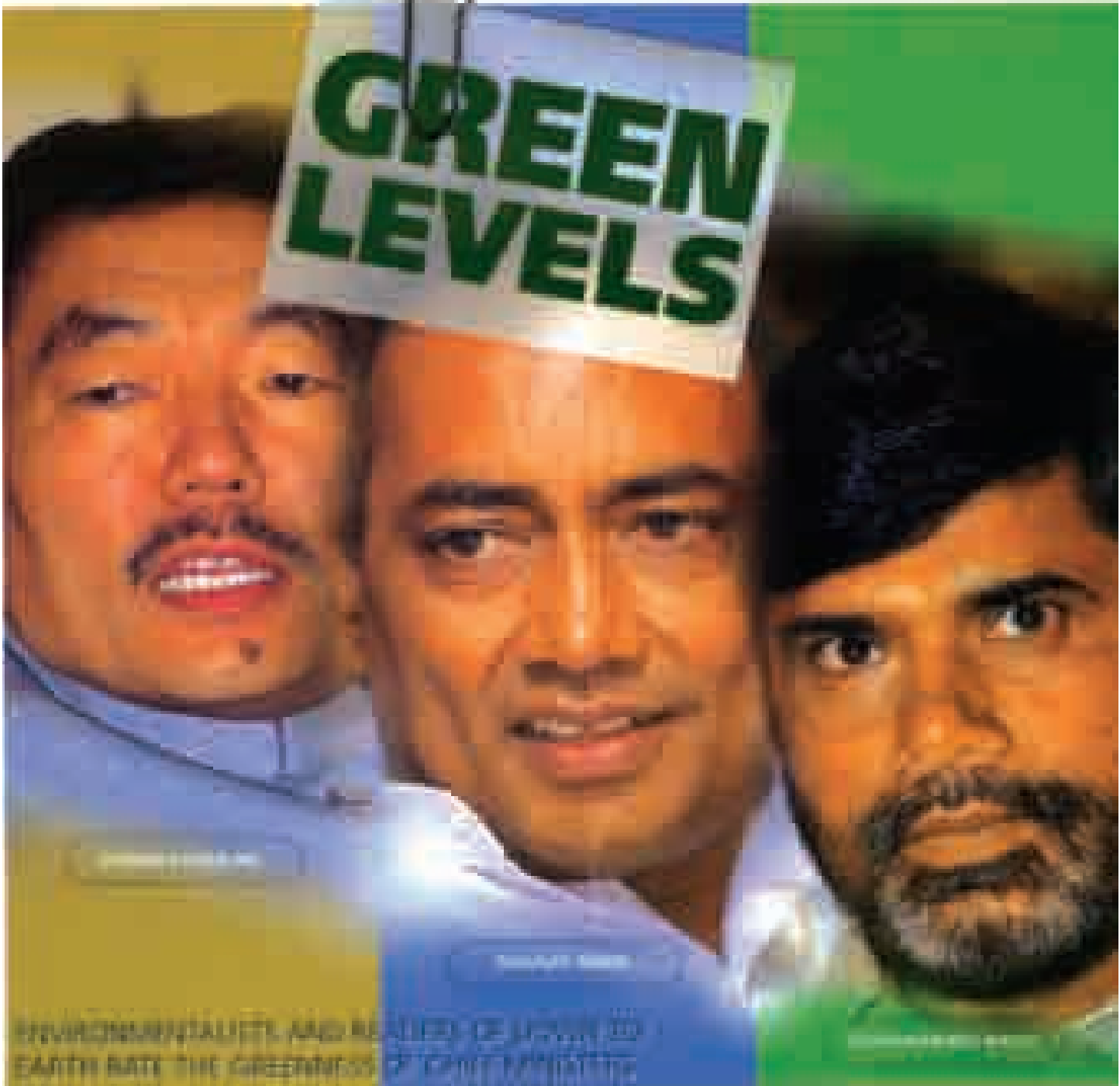




# Down To Earth

1 2008

ISSUE 100



## 2000:

- ❖ Khangchendzonga Biosphere Reserve with area 2619.92 sq. km. declared.
- ❖ Total wildlife protected area 30.77% of total geographical area which is the highest in the country.
- ❖ Government formulates, adopts **State Forest, Environment and Land Use Policy 2000** in view of growing concern for protection of forests, environment and wildlife *vis-a-vis* increased developmental tempo.
- ❖ **In 2000, imposed ban on lopping of Dhupi tree (*Cryptomeria japonica*) and collection of Nagbeli (*Lycopodium*) and Mosses.**
- ❖ **Eco Clubs and Green fund for Schools and Colleges instituted.**



Eco-Club of Government Secondary School, Reshi, West Sikkim

## 2001:

- ❖ Sacred peaks, caves, rocks, lakes, 'chhortens' and hot springs notified.
- ❖ Notified in 2001, sacred peaks, caves, rocks, lakes, '*chhorten*' & hot springs and banned scaling of important peaks including Mt. Khangchendzonga (8598m) for mountaineering expeditions, etc., conservation of unique terrestrial & aquatic eco-system of wetlands/lakes by prohibiting the commercial activities to preserve the Heritage and fragile ecology.
- ❖ Network of JFMC/EDCs and Watershed Development Committees (WDCs) created.
- ❖ State Biodiversity Park at Tendong, South Sikkim established.

## 2002:

- ❖ **Environmental Education introduced in Schools from Nursery to Class-VIII**

Forest, Environment & Wildlife management Department had been playing a key role in imparting environment awareness and education to school children and youths of the state through implementation of various action oriented schemes as under:

- National Green Corps Programme
- National Environment Awareness Campaign
- Green School Programme
- ❖ **State Medicinal Plant Board (SMPB) set up** to concretize action plan on medicinal plants in the State with Hon. Chief Minister as Chairman.
- ❖ **Herbal Gardens created** in different Panchayats; care and management with technical inputs from the forest department.
- ❖ **Sikkim to go organic**; ban on chemical fertilizers, pesticides to save our fields from the scourge of pollution. Ban on Vulture killer NSAID Diclofenac through government notification
- ❖ **Pangolakha Wildlife Sanctuary, East Sikkim declared.**



Red Panda *Ailurus fulgens* (State Animal of Sikkim)

#### 2003:

- ❖ **Eleven Important Bird Areas (IBAs) in Sikkim identified and recognized by government, the first-of-its-kind in the country.**
- ❖ Biodiversity and Silviculture Research through Peoples Participation, Collaborative projects with National and International research Organisations with stress on capacity development of local intellectual manpower.
- ❖ State Biodiversity Strategy and Action Plan (SBSAP) prepared after detailed consultations. Sikkim State Biodiversity Board (SSBB) constituted.

#### 2004:

- ❖ Green Indicators, 2004 a report developed by Noidabased group finds the Forest Protection Index of Sikkim to be the highest in the country with 0.903 points in protection of natural heritage.
- ❖ First Himalayan state to use Global Positioning System (GPS) for survey and demarcate Reserve Forest boundaries.

#### 2005:

- ❖ Sikkim Ecology Fund and Environment Cess Act, 2005 framed. This Act provides for levy of cess on industries, traders and consumers for articles which pollute environment.

## 2006:

- ❖ E-governance strengthening by establishment of ENVIS (Environmental Information System) Centre and website ([www.sikervis.nic.in](http://www.sikervis.nic.in)) launched to disseminate information on status of environment and related issues.
- ❖ Regulation of Trekking Rules, 2006 notified.
- ❖ Kitam Bird Sanctuary, South Sikkim declared.



State Green Mission launched to integrate people with nature and invoke mass support

### ❖ **State Green Mission launched**

The Government of Sikkim launched a unique and innovative programme called “State Green Mission” with the view to raise avenue plantation along the roads and beautification of all vacant and waste lands to further reinforce wide spread recognition of Sikkim being a Green State.

State Green mission aims to integrate people with nature and invoke mass support for the cause. State Green Mission is one of the most innovative and effective policy articulations by State Government to realign people to the giant task of protecting, managing and regenerating the greenery in the state on their own with the Department guiding and supervising various operations. It is now an annual ritual on 15 June with focus on mass participation of general public and government

A State level committee under the chairmanship of the Chief Minister is formed to oversee and to provide policy and administrative support to this mission. The Forest, Environment and Wildlife Management Department are the Nodal Department. At constituency level, there is Green Task force headed by the Area MLA to implement the programme in the Field. One District level officer is appointed as Nodal officer for each constituency. The Forest Department will provide all technical guidance, saplings and manure for the programme. All the Government departments will provide managerial and labour force from the existing establishment. At ward level, one village protection committee is constituted headed by the concerned ward Panchayat member.

The programme was conceived by the Chief Minister as a symbol of the Government's resolve to convert Sikkim to a model “GREEN” State with an overwhelming emphasis on environment friendly development.

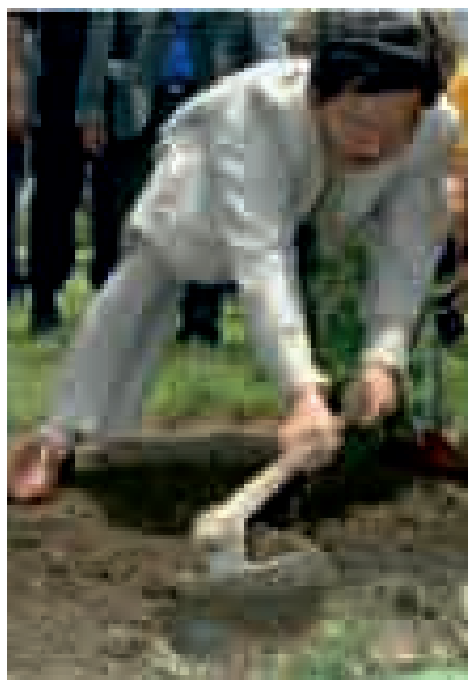
It was proposed to cover the whole state within three years right from 2006-07 to 2008-09 and follow up the programme then onwards on annual basis. The State Green Mission has now reached its fifth phase of implementation and more than 80% survival of plantation has been recorded as the main success indicator of the mission.

**Total saplings (in lakhs) planted under State Green Mission**

Sl.No.	District	Phase-I 2006-2007	Phase-II 2007-2008	Phase-III 2008-2009	Phase-IV 2009-10	Phase-V 2010-11	Total
1	North	0.33	3.46	2.47	0.75	0.79	<b>7.80</b>
2	East	2.66	2.74	1.55	1.53	1.98	<b>10.46</b>
3	South	1.19	2.15	0.82	0.23	0.53	<b>4.92</b>
4	West	1.58	3.43	1.78	1.12	1.54	<b>9.45</b>
<b>Total</b>		<b>5.76</b>	<b>11.78</b>	<b>6.62</b>	<b>3.63</b>	<b>4.84</b>	<b>32.63</b>



Public Participation in action



Hon'ble Chief Minister, Shri Pawan Chamling planting a sapling (left),  
Students on a plantation drive (right)

- ❖ Wetland Conservation Programme formulated and six wetland complexes included in National Wetland Conservation Programme.



Tsomgo Lake, East Sikkim

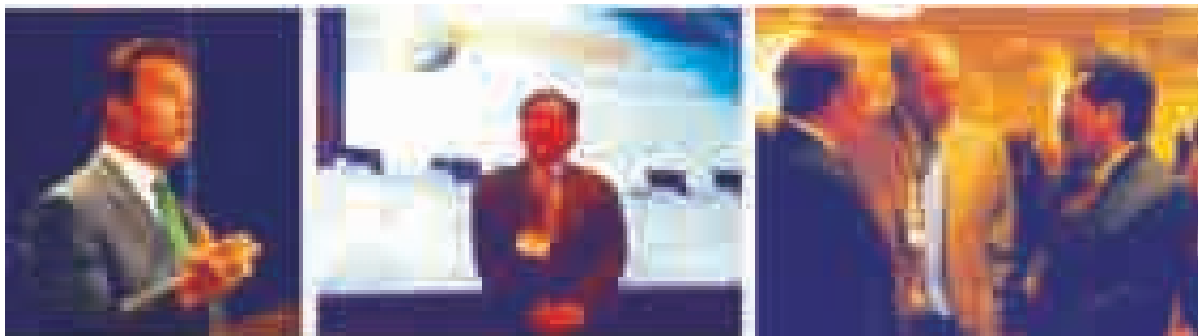
- ❖ State Environment Agency constituted to coordinate and implement activities relating to environment awareness, education and information in the state.

**2007:**

- ❖ State Glacial Commission formulated.
- ❖ National Bamboo Mission launched.
- ❖ Sikkim has become the first State in the country to constitute a high level team for the study of glaciers and alpine ecosystems in the light of the prevailing global warming concerns.

**2008:**

- ❖ **Shri Pawan Chamling, Chief Minister of Sikkim participated in the Governor's Global Climate Summit at California on invitation of the California Governor, Mr. Arnold Schwarzenegger.**



Shri Pawan Chamling, Hon'ble Chief Minister of Sikkim at the Governor's Global Climate Summit at California on invitation of the California Governor, Mr. Arnold Schwarzenegger.



- ❖ Awarded following appreciation from Centre for Development Finance (CDF) at the Institute for Financial Management and Research (IFMR) ranks Sikkim
  - First in Natural Resource Management
  - First in performance in Land Use
  - Second best State in overall Environmental Sustainability Index (ESI).



- ❖ Sikkim hosts the International Flower Festival at Saramsa Garden from 14th -16th March.



Shri Montek Singh Ahluwalia, Deputy Chairman, Planning Commission, Government of India and delegates at the inaugural function of the International Flower Show March 2008

- ❖ State of Environment (SoE) Report, the first of its kind in the state prepared and published.
- ❖ Eco-Tourism Directorate created.
- ❖ Hamro Van media venture on local cable TV launched for awareness.
- ❖ Chogyal Palden Thendup Namgyal Park, Gangtok, created.
- ❖ Sikkim Forests, Water Courses and Road Reserve (Preservation and Protection) Act 1988 got assent from President of India (16 May 2008).
- ❖ Setting up of State Council for Climate Change.

#### 2009:

- ❖ Department completes 100 years of service and celebrates its centenary year.
- ❖ **State again ranked at the highest by Centre for Development Finance on ESI ranking on two categories**
  - Reducing Pressure on environment.
  - State's responses to maintain their environment.
- ❖ **Ten Minutes to Earth launched**

Sikkim's Earth Hour planting for the planet through “Ten Minutes to Earth” supporting the United Nation Environment Programme (UNEP) worldwide Tree Planting Campaign “Plant for Planet: Billion Tree Campaign”, Sikkim Government under the guidance of the Chief Minister of Sikkim called 'Ten Minutes to Earth, 10 Minutes to Greenery' was launched and implemented on 25<sup>th</sup> June, 2009 with wide public participation in an unprecedented scale. The event is now an annual ritual.





All nooks of the State Participate in the Ten Minutes Plantation Drive

- ❖ Green School Programme (GSP) of Center for Science and Environment (A Delhi Based NGO) in co-ordination with the ENVIS center of the Department launched at the state level in Sikkim in all schools, the first of its kind in the country. Eighteen Schools participated and three Government schools bagged national award based on all India ratings. Reshi Government Senior Secondary School was selected as India's top 10 schools, Linkey and Namcheybong Government Secondary Schools bagged best manager award in the country for air and energy. This programme was relaunched in 2010 and around 65 schools participated in the Teachers Training Program.
- ❖ Sling Dong Tinkitam Fairrieanum Conservation Reserve, South Sikkim for the protection of orchid *Paphiopedilum fairrieanum* and its environment declared.
- ❖ Working Plan under completion; Wildlife Management Plans completed and under implementation.
- ❖ **Sikkim State Forest and Tree Cover has increased by 3.5% from the year 1997 (44.09%) to 2009 (47.59%) as per forest cover assessment by Forest Survey of India (State of Forest Report 2009)**



Ms. Sandhya Pradhan, Programme Officer (ENVIS) and Mr. M. R. Rai, DFO receiving certificate awarded by Centre for Science & Environment (CSE), New Delhi from Mrs. Sharmila Tagore, the Chief Guest on the occasion.

In spite of sustained demand of forest land for non-forestry purposes, the forest cover showed a rising trend due to green policies of the government, as is evident from the following table.

Year	Forest and Tree Cover Area as per FSI report (Sq. Km)	% of Total geographical Area
1997	3129	44.09
2009	3377	47.59

- ❖ **Sikkim Biodiversity Conservation and Forest Management Project:** Terms of Reference (TOR) signed with Japanese International Cooperation Agency (JICA) funded externally aided project with focus to promote ecotourism and natural resource conservation. The project has a financial outlay of Rs. 330.57 crore over a 10 year period.
- ❖ Declaration of Sidkeong Tulku Bird Park at Rabdentse, Gyalshing, West Sikkim, Rangrang Butterfly Park under creation in North Sikkim.
- ❖ In order to protect and preserve the very old trees of Sikkim, a concept of identification and declaration of Heritage trees was started with active participation of the local people. In North Sikkim, a Juniper tree bearing a girth of 42 ft was selected to be declared as a Heritage tree amongst several other trees with big girth.

#### 2010:

- ❖ **International Rhododendron Festival:** The Government of Sikkim launched various events like Live Rhododendron Show, Nature Camps, Bird watching, Mountain biking and so on to celebrate the International Rhododendron Festival from 25<sup>th</sup> April- 15<sup>th</sup> May, 2010. International Conference on Rhododendrons was organized and hosted by the Department on April 2010 with eminent Scientists from Germany, Netherlands, Bhutan, Belgium and India.



Hon'ble Chief Minister, Shri Pawan Chamling at the inaugural function of International Conference on Rhododendrons at Saramsa Ranipool, East Sikkim | April 2010

- ❖ “Ten minutes to Earth” programme observed throughout the state on 25<sup>th</sup> June as a massive plantation drive. This first-of-its-kind event is a follow up of the unique initiative “10 minutes to Greenery” which was launched in 2009.



His Excellency, Shri B. P. Singh, Governor of Sikkim, Hon'ble Chief Minister Shri Pawan Chamling and his wife planting saplings of rhododendron tree in the premises of *Ganesh Tok*, Gangtok during the Ten Minutes of Earth 25 June 2010

- ❖ Declaring *Rhododendron arboreum* Town at Rabong Bazar, South Sikkim
- ❖ Launching of environment friendly Eco-Highways, Green Roads
- ❖ Launching of Chief Minister's Rolling Trophy for awarding the Best Green School of Sikkim, *the first of its kind in the country*.
- ❖ The 13<sup>th</sup> Finance Commission recommends “Green Bonus” with regard to the need to manage ecology, environment and climate change impacts consistent with sustainable development. While making its recommendations the 13<sup>th</sup> Finance Commission has recommended, inter-alia, a grant to all states for Forests, aggregating Rs. 5000 crore for its award period 2010-15. This grant has been calibrated to the extent of standing forests in each state. Sikkim has been awarded with a grant of Rs. 40.56 crore over this period.
- ❖ The sustainability index of the Sikkim Forest is being initiated and developed by analyzing all the dimensions of sustainability like ecological, economical and sociological, a triangle of factors. The net result of which will reflect the areas that should be given more priority to. Based on the indicator of the Sustainability Forest Index we will allocate the resources scientifically.

## 2011

- ❖ In order to strengthen the objectives of the Preservation and Protection of our natural resources the frontline staff of the Forest department were given special incentives related to promotion, salary and other field essentials.
- ❖ The forestry sector was bolstered when 125 new Forest Guards of which 33% are females were recruited through open competition. Presently they are undergoing training at Sikkim Armed Police Camp at Pangthang and the Police Training Centre, Yangang.
- ❖ In a pioneering initiative, the Forest Guard syllabus was designed into modules to prepare modern age grass-root guardians and managers of natural resources. The arms training along with physical and discipline aspects are being conducted by the Sikkim Armed Police and Police Training Centre whereas Forestry know-how is being imparted by the forest officers and staff. The trainees have undertaken field tour to cover all the eco-regions of the State. Exposure trip outside the state to Corbett National Park, Uttarkhand, Forest Research Institute, Dehradun was also been organized. Every effort is being made to prepare these forest guards to people's needs without compromising on the basic ecological ethos.
- ❖ Working Plan Circle has, for the first time, prepared scientific, democratic and technical working plans for the East and West Sikkim. These working plans have been sent to Government of India for approval. The preparation of working plans for North Sikkim is in process. For preparing working plans and forest inventory

preparation, sample plots were laid throughout the forests and to make the exercise democratic the ACFs also conducted PRA in different Panchayats. Similarly meetings were held in different district headquarters to incorporate views of line departments. The Reserve forests were divided into compartments for the first time for easy and scientific management of forests. GIS based Maps have been prepared for Division, Range and Block levels.

- ❖ The Working Plan Circle is also engaged in a National Vegetation Carbon Pool assessment. Its aim is to assess the total amount of carbon in Sikkim Forests. The sample plots have been laid in East, West and South Sikkim.
- ❖ Sustainable Forest Management (SFM) Cell opened in the Working Plan Circle to develop practical methods, guidelines and strategies to apply ecosystem approach in the management of natural forest areas. It would measure the indicators of Sustainable Forest Management (SFM) (e.g. area of plantation done, area affected by forest fires, pest and diseases, encroachment, water availability, involvement of people in the management of forests etc.) periodically and assess the changes and trends in the forest management in Sikkim. The cell will periodically calculate the Forest Management Sustainability Index for Sikkim. This will give guidelines to direction of management of forests. At the same time it would work as the databank for forestry activities in Sikkim.
- ❖ Remote Sensing and GIS cell in the Working Plan Circle has created a huge digital database on various aspects of forestry. The Department intends to use remote sensing and GIS aspects on day to day aspects basis. The Department plans to have a satellite based forest fire monitoring system. All the activities of the Forest Department would be recorded in GPS (Geographical Positioning System).
- ❖ A Climate Change Cell has been created which will act as a one stop centre for all climate change related issues in the Department. Its activities would include preparation of climate dataset for Sikkim, assessment of impact of climate change on the forests of Sikkim and calculation of vegetation carbon pool (carbon locked in the forests). Permanent preservation plots have been laid out for benchmarking biodiversity and ecological observations in various altitudes and bio-geographic zones.

#### ❖ **Eco-Sensitive Zones**

As per the provisions under Environment Protect Act, 1986 and the directives of the Honourable Supreme Court Eco-Sensitive Areas need to be declared around each National Park and Sanctuaries. These eco-sensitive zones shall serve as a shock absorber for protected areas. It would serve as a transient zone between an area requiring high protection to an area requiring less protection. The idea of eco-sensitive zone as has been discussed by the National Board for Wildlife is that activities in the Eco-sensitive Zone is to be of regulatory nature rather than prohibitive unless and otherwise so required. Following this the State Government of Sikkim has taken up the process of identifying and demarcating eco-sensitive zones around protected areas. This identification of Eco Sensitive Zones is likely to be complete by March 2012.

#### ❖ **Critical Wildlife Habitats**

Under the provisions of the Schedule Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 Critical Wildlife Habitat is to be identified in each Sanctuary or National Park. The identified areas will be treated as inviolate areas for the conservation and propagation of Wildlife around those areas. These areas are supposed to be kept as a last option for allotment of forest land to the qualified beneficiaries under the act. The Department of Forest, Government of Sikkim has initiated this exercise and is likely to be complete by May 2012.

#### ❖ **Rationalization of boundaries of the Protected Areas**

There are long standing disputes regarding the boundaries at certain stretches of some of the boundaries of the Protected Areas. The Sikkim Forest Department has proceeded to resolve such disputes through rationalization of boundaries of some of the Protected area within the framework of the extant law. Although the protected areas have been declared under Section 8 and 35 of the Wildlife Protection Act, 1980, the final declaration is pending for other protected areas except for Pangolakha Wildlife Sanctuary. The process is on to effect such final declaration under Section 26 A of the Wildlife Protection Act, 1980 soon after the rationalization of the Protected Area boundary is over by August 2012.



❖ **Status of the survey of the Reserve Forest Area boundaries till date**

The boundary of the Reserve Forest areas of Sikkim has been demarcated with the use of GPS. Boundary pillars marking the boundary around the Reserve Forest have been demarcated with the help of boundary pillars. A total of 616.60 Km of boundary survey is complete with 5160 numbers of boundary pillars.

❖ **Research Works**

Several research works have been initiated by the Department. Some of the significant ones are:  
(i) Working on the impact of the Forest Fires on the Forest Eco-system.  
(ii) Management of invasive species and mapping of invasive species in Sikkim.  
(iii) Documentation of vegetation of Sacred Groves of Sikkim.  
(iv) The State of Sikkim has patches of unique vegetation an example of which is the rich species of Rhododendrons. A special management plan is being developed for management of such unique vegetation types.

❖ **Glacial and Climate Change studies and Adaptation Programme.**

Several studies have been taken up to study Glacier and Climate Change. An Advisory Council 'Sikkim State Council of Climate Change for providing policy direction and institutional mechanism for effective implementation of various climate change adaptation programmes has been constituted by the State Government. Sikkim may be the first Himalayan State who has carried out basin wise glacier inventory way back in 1999 by Science & Technology Department of the State Government with Space Application Centre, Department of Space, Government of India. The inventory of glaciers of Sikkim was carried out using satellite data of 1st January 1997. Based on this work, an atlas of the Glacier Inventory maps was also prepared. As per this study, Sikkim has 84 glaciers covering an area of 440 sq km. The total extent of permanent snowfields was measured as 251 sq.km. This makes total extent of an area under glaciers and permanent snowfields as 691 sq.km. Most of the glaciers have an area of less than 5 sq.km. There are on above 5 sq.km. and only two glaciers are having an area of more than 20 sq.km. The total glacial and permanent snow cover-stored water is estimated at 145.05 cubic km. A study of glacial fluctuations in the Sikkim Himalaya has been taken up and the monitoring of the Sikkim Himalayan Cryosphere with the use of Remote sensing Technology. Also a Joint Collaboration project on climate change Research in terrestrial Environment ( PRACRITI) with Space Application center, Department of Space, Govt of India. Several other studies like the impact of Climate Change on Large Cardamom in Sikkim, Climate change and perception of society in Sikkim: A State Action Plan for Climate Change, the preparation for which has been initiated.

## Future Plan

The sectoral future plan in the forestry and environment sector till 2015 has been framed. The underlying theme of forestry would be the scientific management of forests for biodiversity conservation and for the benefit of Sikkimese people. The sectoral future plans for different sectors are as follows.

### 1. FLAGSHIP PARTICIPATORY GREENING PROGRAMMES OF SIKKIM:

#### 1.1 STATE GREEN MISSION

Green governance has always been at the forefront of agenda in Sikkim. The Chief Minister of Sikkim, Shri Pawan Chamling was awarded the Greenest Chief Minister of India by Centre for Science and Environment, New Delhi in 1999. Sikkim was adjudged as the best performing State in India in conservation of natural resources by Centre for Development Finance, Chennai. This needs a special appreciation because Sikkim has all the temptations of squandering its natural resources as it tries to improve the living standards of Sikkimese people. Greening or green governance is not new to Sikkim but the concepts of greening are always new and innovative here. Chief Minister of Sikkim, Shri Pawan Chamling has been known both nationally and internationally for his green governance and out of box thinking in developing new and unique people oriented green initiatives. Widely acclaimed and highly successful programme of State Green Mission is just one among them.

The flagship 'State Green Mission' program is one of its kinds in India and there are no parallels to it. The State Green Mission aims to inculcate green consciousness in every citizen of Sikkim. Every vacant patch of land in Sikkim is being planted with flowering and fruiting trees with the people's participation. The conservation paradigm of the Chief Minister of Sikkim is always very imaginative. It is not based on growth versus green but growth with green. This unique innovative programme was conceived by Shri Pawan Chamling himself and formally launched by him on 27/2/06. The programme started with avenue plantation for beautification and gradually went on to become mass movement. Now all vacant lands, ranging those from monastery lands to community lands in village are being covered under the programme and all walks of life ranging from government officers, to public to housewives to army enthusiastically participate every year in the programme voluntarily. This has given boost to eco-tourism in addition to increasing green cover. The special feature of this programme has been the greening at no cost. It was just the motivation by the Chief Minister which manifested itself in participatory greening.

This flagship greening programme of Sikkim would be made further more participatory in the coming years. More and more areas would be taken up for plantation in blank areas along with enhanced care of plantations



State Green Mission - Roadside Plantation of flowers

done earlier. More emphasis would be given to flowering and wild fruit varieties. **State Green Mission would be made the annual ritual and would be celebrated every year on 15<sup>th</sup> June.** All the town and cities would be beautified with flowering and ornamental plants according to zonation. Eco-friendly programmes like Lali Gurans road in South Sikkim, RabonglaNamchi eco-highway and declaration of Rabongla as Rhododendron city would be launched. Latest hybrid plants of Japanese cherry, dog woods, mallus species, magnolia hybrids for temperate zone and palms, cycas hybrid, cassia species, bahunia species etc. for tropical towns and cities would be introduced. The trees, specially of uttis, posing danger in towns will be gradually replaced with these varieties. Another 2,500,000 seedlings would be planted by 2015 under State Green Mission.

### **1.2 TEN MIUNTES TO EARTH:**

It is a very unique programme conceived by Chief Minister of Sikkim, Shri Pawan Chamling where everybody commits him/herself to earth for ten minutes by planting a sapling. It was launched on 25<sup>th</sup> June, 2009 at 10.30 am when the thousands of hands in Sikkim lovingly lifted the seedlings for plantation on mother earth. This initiative also supported the United Nations Environment Program (UNEP) worldwide tree planting campaign “*Plant for the Planet: Billion Tree Campaign*”. About 610,000 seedlings were planted throughout the Sikkim. The idea was to plant trees equivalent to the population of Sikkim in ten minutes; one tree for one person. This was also a record that within ten minutes the plants numbering population of the State were planted anywhere. This ten minutes activity would be able to sequester about 1400 tons of carbon di-oxide annually. This is the Sikkim's own unique way of contributing to climate change mitigation.

Chief Minister has further given emphasis on important native species like quercus (oak), rhododendron, magnolia and native wild fruits to have a well balanced forest ecosystem and preserve local biodiversity. The people of Sikkim, communities, industries, government officials, civil society organizations and religious institutions participated on a massive scale. It was the people's program conceived and initiated by Shri Pawan Chamling, the Forest Department acted as just a facilitator. The event was unprecedented and one of its own kind. The objective was not only to make tree planting as a Sikkimese way of life but also to send the message to the world community at large that 'we care for nature'. The year 2010 was equally illustrious. Cumulative seedlings planted under the programme have gone up to 924600.

This unique programme will continue with innovative themes for coming years. The Department will continue to provide free saplings for plantations to the public and institutions. In the coming years too, the idea 'Each one plant one' would remain and the saplings equal to the population of Sikkim would be planted. **Ten Minutes to Earth too would be made the annual ritual and would be celebrated every year on 25<sup>th</sup> June.**

In addition to other activities over 1,500,000 seedlings would be planted by 2015 under the programme Ten Minutes to Earth.



Flagship Participatory Greening Programmes of Sikkim

### **1.3 CREATION AND MANAGEMENT OF PROPAGATION NURSERY**

The seedlings in the nurseries of the Forest Department have been the backbone of state governments greening programmes. Most of the seedlings are provided to the public and the institutions free of cost. In addition to the existing nurseries new propagation nurseries will be created in lowland and highland areas, for the purpose of ex-situ conservation and dissemination of important indigenous plant species for cultivation, multiplication, and trading. The nurseries will be used to propagate rare and endangered plant species, difficult-to-propagate species and species with high medicinal and economic values. Chief Minister has already directed production of 10 million plants of indigenous varieties. This would be accomplished by intensifying the management in existing nurseries and creating new nurseries. For indigenous plants with high ornamental values such as wild



Creation and Management of Nurseries

orchid, primulas, rhododendrons, and other wild flower species, 1 number of floricultural propagation nursery will be created in Gangtok. Hi tech nurseries would be established which would focus on regeneration of oaks and other threatened species. 5 number of propagation nurseries are planned to be created.

## **2.0 WILDLIFE MANAGEMENT:**

State Board for wildlife under the chairmanship of Chief Minister has achieved several milestones. Sikkim State has progressed a great deal with the establishment of one huge National Park i.e. Khangchendzonga National Park, one Biosphere Reserve known as Khangchendzonga Biosphere Reserve and eight Wildlife Sanctuaries including one Faieanum Orchid Conservation Reserve, all occupying as much as 42.54% of State's total geographical area under the wildlife protected area network including Biosphere Reserve. It is one of the highest coverage when compared with other States in the country. The State has been able to set aside 51.68 % of the State's forest land area under the wildlife protected area network including Biosphere Reserve for the protection and conservation of State's rich wildlife and biodiversity resources. Barsey Rhododendron Sanctuary, West Sikkim covering an area of 104 Sq.kms was commissioned and declared for the purpose of protection of flora & fauna especially the flora (Rhododendron species) and other bio-diversity resources of the area during the year 1996 vide Notification No. 50/WL/F/95/269 dated 08-07-1996. Himalayan Zoological Park, Bulbulay established in an area of 230 Ha was formally opened to the tourists during May, 1997 vide Notification no. 51/WL/Forest dated 28-05-1997. Bringing of wilderness areas under the fold of protected area has continued since then. Several new sanctuaries like Fambang Lho and Kitam Bird sanctuaries took birth during these years. Protection, preservation and conservation is achieved through the people's participation represented by Eco-development Committees (EDCs) formed around the protected areas. There are altogether 57 EDCs already formed around the protected areas who are implementing Wildlife Forest Development Agency schemes since the year 2004. There is a ban on killing of wild animals.

The future plan envisages that research studies would be conducted on rare and threatened species of flora and fauna to generate better understanding of their population, habitat requirements and threats. Large undisturbed habitats would be protected from further fragmentation by confining tourism activities only in areas that are already well designated. Joint anti-poaching operations would be conducted and joint patrols of forest staff and local community organizations including EDCs, Himal Rakshak and NGOs would be done. Following strengthening activities are envisioned.



Wildlife Conservation Red Panda

### ***2.1 Strengthening of In-Situ Conservation Areas:***

- State is rich in Butterflies with about 627 species of interest and rarity. Declaration of Butterfly Sanctuaries at Legship, West Sikkim, Sankalang in North Sikkim and Middle Camp in East Sikkim is proposed.
- State has a great and numerical abundance of bird lives of highest interest, beauty and rarity. In order to protect, preserve and propagate bird lives of the state, bird live rich areas such as Rabdentse in West Sikkim, and Goru Zurey in East Sikkim will be proposed for declaration of Bird Sanctuaries/Parks.
- The Tibetan Plateau in North Sikkim abounds in endangered wildlife species such as Tibetan Wild Ass, Great Tibetan Sheep, Tibetan Wolf, Blue Sheep, Snow Leopard, Himalayan Marmot, Snow Cocks and migratory aquatic birds. It is a trans-Himalaya zone and will be proposed for State's Cold Desert Sanctuary.
- Snow Leopard and Red Panda (State Animal) found in the Sikkim Himalayas are among the globally threatened animal species given highest protection under the wildlife laws. In order to initiate long term in-situ protection and conservation of these rare and endangered species, Project Snow Leopard and Project Red Panda will be proposed for launching.
- Zonation of the National Park and Wildlife Sanctuaries will be carried out in order to identify the Critical Wildlife Habitat Areas and to keep these inviolate and the rest for zonation into Buffer and Tourism Zones for manipulation of wildlife and tourism related developmental works for sustenance of these wildlife protected areas.



- The Wildlife Sector has embarked upon for the inclusion of the Khangchendzonga Biosphere Reserve (KBR), Sikkim in the world network of UNESCO's Man and Biosphere (MAB) program and for the inclusion of the Khangchendzonga National Park, Sikkim in the list of World Heritage Site.

## 2.2 *Strengthening of Ex-Situ Conservation Areas:*

- The existing Himalayan Zoological Park, Bulbulay will be developed into a **Modern Zoo** with the new concept of **Immersion Exhibits** of the Sikkim Himalayan animal species. In addition to this, Project Himalayan Tahr Safari Park in an area of 24 Ha. and Project Bird Safari Park (Walk-through Aviary) in an area of 4.45 Ha. will also be developed within the Zoological Park campus. The Zoological Park will also be proposed for re-naming as Sikkim Himalayan Zoological Park with an autonomous status under the Society.
- The Himalayan Zoological Park, Bulbulay will also propose to initiate endangered species conservation breeding projects of target animal species such as Red Panda (State Animal), Blood Pheasant (State Bird), Himalayan Tahr, Blue Sheep and Snow Leopard. In-situ conservation breeding for research and education would be done and the surplus species will be released in their natural habitats to replenish the depleting wild stocks and some will be exchanged with other zoos for conservation breeding programs.
- Sikkim's Red Jungle Fowl, locally known as Luinchey found in the lower forests belts are presumed to be pure wild fowls separated from hybrid individuals. Pure Red Jungle Fowl has become increasingly rare both in captivity and in the wild. In order to protect, preserve and propagate these rare species, Project Red Jungle Fowl for captive conservation program will be proposed for launching at Manpur forest, South Sikkim.
- Establishment of Animal Rescue Centre and Quarantine House for captive animals' health care and hygiene, the Post-mortem House, Incinerator House for strengthening of the veterinary wing of the zoo and the developments of animals' enclosures and zoo infrastructure including a Wildlife Interpretation Centre.
- The Wildlife Sector is already going ahead for establishment of iconic projects such as Sidkyong Tulku Bird Park at Rabdentse, West Sikkim and Butterfly Park at Rang Rang, North Sikkim. The projects are mainly aimed at ex-situ conservation of birds and butterflies of interest and boosting of tourism in the State for its sustenance.

## 3. **FOREST MANGEMENT AND BIODIVERSITY CONSERVATION:**

Government of Japan through Japan International Cooperation Agency (JICA) is providing financial assistance for Sikkim Biodiversity Conservation and Forest Management Project (SBFP) that is being



Ecotourism Policy Formulation



implemented from year 2010-11. The project aims to strengthen biodiversity conservation activities and forest management capacity and simultaneously improve livelihood of the local people who are dependent on forests and are living in forest fringe areas. Project objectives are to be achieved by promoting sustainable biodiversity conservation, afforestation and income generation activities including eco-tourism for the community development. The project activities will be contributing to environment conservation and harmonized socio-economic development of the state in multifarious ways in the next decade. The project has a financial outlay of Rs 330.57 Crore and is of 10 years duration. The main components of the project are indicated below:

### **3.1 FOREST AND BIODIVERSITY CONSERVATION:**

Its aim is to enhance the global, social, and economic value of biodiversity and improve livelihoods in and around protected areas (PAs), buffer zones, and reserve forests. The Department would seek to achieve this objective through the establishment and implementation of sound management plans and the dissemination of biodiversity information for promoting public awareness on the significance of biodiversity. Development and implementation of the management plans for the Khangchendzonga Biosphere Reserve and the seven wildlife sanctuaries will be strengthened. For effective implementation of the plans the focus would be on:

- the enhancement of the spatial and resource information base for planning, implementation, and monitoring of forest and biodiversity management;
- the establishment and improvement of zoning and of plans for the management of reserve forests and protected areas;
- the promotion of public support for biodiversity conservation through research, ex-situ conservation, and extension; and
- the capacity development of the Forestry Department.

For ex-situ conservation and promotion of biodiversity conservation the main activities would include :

- a) Establishment of a Butterfly Park in North Sikkim to ensure environmental and ecological conservation, ecological research, education and awareness, tourism and recreation, and enrich aesthetic experience.
- b) Construction of Main Office Building of Himalayan Zoological Park and Veterinary Care Facility
- c) For the protection of the wild animals, a rescue center and some other equipments will be also established at this zoological park in accordance with the master plan of the zoological park.

In addition, inter-sectoral linkages will be built among the Forestry Department, State Pollution Control Board, Sikkim University, Wildlife Institute of India, Indian Institute of Remote Sensing, Indian Council of Agricultural Research, and Eco Development Committees (EDCs) and other related institutions. Project would result in enhancement and management of forest and biodiversity information base to safeguard forest and biodiversity resources through scientific and systematic planning.

A modern laboratory for Geographical Information System (GIS) and Remote Sensing (RS) will be established under the project at the headquarters of the Department. It will create a huge digital database on various aspects of forestry using remote sensing and GIS aspects on day to day aspects basis. The objective is to develop land use topo maps which will assist planners and decision-makers, including government agencies, donors, and private entities, not only in land use and biodiversity conservation but also in development planning.

#### **3.1.1 INVENTORY AND MONITORING OF BIODIVERSITY**

Rapid biodiversity surveys, which would display the ecosystems throughout the state, will be conducted. The outputs will be 1) biodiversity information on four ecosystems to be used in the production of thematic maps for management so that key areas are protected and 2) data to be stored at the GIS/RS laboratory. Survey will be conducted at approximately 1,000 sample plots throughout Sikkim for quantitative biodiversity study using the digital spatial information base. In addition, known hotspots in forest, alpine, freshwater, and agro-ecosystems will have approximately 300 more plots to present more detailed information. In addition 60 preservation plots survey would be done.

### **3.1.2 STUDY OF IMPACTS OF CLIMATE CHANGE AND GRAZING IN THE HIMALAYAN ECOSYSTEM**

The objectives of these scientific studies are the followings:

- 1) to analyze and understand the trajectory of ecosystem dynamics influenced by global warming in alpine areas, This information will be used to recommend measures for climate change adaptation and methods for monitoring climate change impacts and
- 2) to analyze and understand human-nature interactions related to grazing in alpine, temperate, and subtropical areas for proposing a model for participatory management of grazing. Though grazing has been banned in the state, it has continued to a lesser extent in certain places such as the alpine areas in North Sikkim. The status of grazing in any given location affects its ecosystem and biodiversity and needs to be studied.

### **3.1.3 MANAGEMENT PLANS FOR PROTECTED AREAS (PAs) AND CONSERVATION OF FLAGSHIP SPECIES HABITATS:**

Rationalization of Protected Area Boundaries and Improvement of the PA network will be carried out through survey, demarcation, and gazetting of rationalized PAs and reserved forests and establishment of protected area boundary pillars. New Protected Area will be establishment of Nimphu Wildlife Sanctuary (approximately 200 km<sup>2</sup>) and Fairrieanum Conservation Reserve (orchid reserve, and approximately 0.6 km<sup>2</sup>). To manage and conserve flagship species studies, especially focusing on Snow Leopard, Red Panda, Musk Deer, survey will be carried out to estimate their population density and ranges and to understand their migratory, feeding, and reproduction patterns, their interaction with humans, and their forestry and agriculture activities.



Study on Impact of Ban on Grazing in Himalayan Ecosystem

### **3.1.4 ENHANCEMENT OF WORKING PLANS AND ESTABLISHMENT OF FOREST MANAGEMENT ZONES:**

It will be considered so that the underlying theme of working plans will remain scientific, modern and democratic management. Surveys will also be conducted to determine the management regime, including the silvicultural regime for each cluster. Public consultation will be conducted before finalising the zonation.

### **3.1.5 INSCRIPTION PROCESS OF KHANGCHENDZONGA BIOSPHERE RESERVE ON THE WORLD HERITAGE LIST:**

The objective of the subcomponent is to assist the Department in enlisting Khangchendzonga and the Lepchas for its inscription on the World Heritage List through preparation of a detailed document on the outstanding universal values.

### **3.1.6 KNOWLEDGE GENERATION AND DISSEMINATION OF BIODIVERSITY AND BEST PRACTICE INFORMATION;**

This will be done through

- a) Establishment of Sikkim Biodiversity Centre
- b) Production and dissemination of booklets of best practices
- c) Grant scheme for enhancement of biodiversity research and extension that will provide a window of opportunities not only for the Department but also for universities, schools, local governments, the private sector, NGOs, communities, and individuals to engage in the conservation and management of biodiversity and in raising awareness about sustainable resource use.

### **3.2 PROMOTION OF ECOTOURISM:**

The ecotourism will be promoted with two principal objectives:

- i) providing income generation opportunities to local communities living in the forest fringe area , and
- ii) ensuring that the impacts of developing ecotourism do not damage the environment.



Promotion of Village Ecotourism

### **3.2.1 Activities:**

The activities envisaged under this component are as follows:

#### **(a) Ecotourism Policy Consultative Committee**

For formulation of Ecotourism Policy a Committee has been constituted under the Forest Minister with expert members from Government and international NGO in field of ecotourism TIES ( The International Ecotourism Society of USA), local NGOs, national level NGOs, members from Travel Agent Association of Sikkim (TAAS), Sikkim Association of Adventure Tour Operators (SAATO) etc. The Committee will formulate the Policy with the public consultations at each district level. The objective is to ensure that all the stakeholders in the state have a common understanding of the concept of ecotourism and that tourism infrastructure is constructed respecting acceptable environmental and cultural standards.

#### **(b) Establishment of an Ecotourism Marketing Cell**

Ecotourism Marketing Cell (EMC) will be established under the Project in order to address the weak marketing of ecotourism in Sikkim. Tourism professionals, especially ecotourism specialists, will be recruited from the private sector to form the EMC established under the PMU. The cell will formulate a five-year Ecotourism Marketing Strategy and will be involved in implementing the same. The five-year ecotourism marketing strategy will include the following:

- 1) A promotion and branding strategy targeting selected markets in India and abroad that would be attracted to enjoy ecotourism in Sikkim
- 2) A PR strategy to build up relationships with the media and with suppliers
- 3) An 'ecotourism events and festival' strategy, which will support festivals annually.

For ecotourism marketing 5 Overseas PR Tours with Private Operators and 10 National PR Tours with Private Operator would be conducted.

### **3.2.2 DEVELOPMENT OF TREKKING ROUTES AND DEVELOPMENT OF WILDLIFE-WATCHING AREAS**

Trekking opportunities in Sikkim are excellent traffic is mostly concentrated on one trek. It is proposed that 184 km of trails with 16 campsites will be developed or improved to create 4 international standard trek routes to relieve the over-congested Dzungri trek. Other routes with a total length of 76 km will be considered for development. All wildlife areas would be developed as eco-tourism destination. 20 locations would be developed as Wildlife-Watching Areas. 9 Forest Rest Houses would be developed for promoting ecotourism.

### **3.2.3 CONSTRUCTION OF INTERPRETATION CENTERS:**

**9 Nature Interpretation Centers** will be created at areas of tourism interest to provide visitors with information on biodiversity available near the site with a small museum and a small library to consult relevant documents. The centers will be built near ecological gardens to exhibit important flora and fauna associated with the locations. Training of local community members to manage and work in interpretation will be provided so that they can function as eco-guides.

### **3.2.4 SOLID WASTE MANAGEMENT:**

Introduction of a solid waste management at tourist areas linked to the priority villages will be carried out to ensure cleanliness at tourist sites. A waste collection and disposal system will be introduced at and around the prioritized villages. This will improve the living conditions of the local community and may be replicated in other villages along the collection route.

### **3.3 COMMUNITY PARTICIPATION AND JOINT FOREST MANAGEMENT:**

The devolution of power to grassroots level has always been the policy of the Government. In addition to existing Self Help Groups (SHGs), Joint Forest Management Committees (JFMCs) and Eco-Development Committees (EDCs) new ones will be formed. It will also provide opportunities for these communities to

enhance their livelihood through forestry, ecotourism, and other income generation activities. A total of 180 villages will be selected for project intervention which includes 90 new intervention villages where new JFMC/EDC will be established. New afforestation works on 3600 ha of forest blanks will be carried out with full participation of JFM Committees.

### **3.3.1 ENTRY POINT ACTIVITIES**

The funds will be provided for target JFMCs, EDCs, and PSS's to carry out entry point activities (EPAs) at an early stage of project implementation. EPA refers to small-scale assistance for the creation of community assets and should address the common urgent needs of the entire community. EPAs will be selected in a participatory manner.

### **3.3.2 FOREST MANAGEMENT IN RELIGIOUS AREAS:**

The sacred groves and forests bear not only religious and cultural values, but are also highly important in terms of biodiversity because they have long been protected. Conservation of such sacred groves and other religious areas will be done by providing technical services, and enhancing plantation and protection activities by religious institutions.

### **3.3.3 INCOME GENERATION ACTIVITIES THROUGH SELF HELP GROUPS**

The aim is to diversify the sources of income and improving the micro enterprises of the target village residents. It will also encourage SHGs to carry out income generating activities. The Project will enable the Joint Forest Management Committees (JFMCs), Eco-Development Committees (EDCs), and *Pokhari Sanrakshan Samiti* (PSS) to provide microfinance loans to the SHGs through the provision of a block grant. A total of 540 SHGs will be supported.

### **3.3.4 SKILL DEVELOPMENT AND EXPOSURE VISITS OF JFMCs, EDCs**

Members of JFMCs, EDCs, and PSS's who are responsible for administrative and financial management of their committee will be trained in basic management skills. Skills development of SHG members will be conducted to enhance the productivity, quality, and profitability of the SHGs' production activities or service provision. Selected members of SHGs JFMCs, EDCs will be taken on exposure visits to learn from the experiences of successful SHGs

### **3.4 ORGANIZATIONAL STRENGTHENING OF THE FOREST DEPARTMENT :**

This will be done to enhance the capacity of the Forest Department to deliver forest management and biodiversity conservation services efficiently by

1. Training of the Forest Department Officers and Frontline Staff members on economic, ecological, technical and sociological issues.
2. New Establishment of Training Facility for capacity development in the field of forest management like Biodiversity Training Centre at Pangthang.
3. Renovation and Improvement of Headquarters with parking facility.
4. Securing productive working environment to increase productivity of officials.
5. Promoting improved decentralized implementation mechanism.
6. Strengthening the capacity of frontline staff members by improving working conditions.
7. Improving the mobility of frontline staff members.
8. Posting of check posts in strategic points throughout Sikkim.
9. Positioning of Forest Guards near reserved forests and protected areas.
10. Improving communication net work in the Department.
11. Construction of residence and related infrastructure for the Forest Department staff.



Training of frontline Staff

#### **4. FOREST MANAGEMENT PLANS:**

Chief Minister has always laid emphasis on scientific management of forests to meet the people's need. In accordance with this philosophy modern, scientific and democratic working plan for all the districts would be prepared. The Forest Department has already procured two automatic weather stations for weather monitoring. Special emphasis would be given for controlling forest fires in areas prone to forest fires.

##### **4.1 SUSTAINABLE FOREST MANAGEMENT :**

As per the Gazette notification from Home Department a 'Sustainable Forest Management Cell' has been established in Working Plan Circle with a detailed mandate. It would aim to institutionalise the criteria and indicator (C&I) framework for sustainable management of forests.

##### **4.2 REMOTE SENSING AND GIS :**

Remote Sensing and GIS cell has created a huge digital database on various aspects of forestry. The Department intends to use remote sensing and GIS aspects on day to day basis. The Department plans to have a satellite based forest fire monitoring system. All the division offices would be equipped with necessary software and hardware for creating Remote Sensing and GIS sub-units in all the Forest Division offices. Applications of more information technology tools like development of various forestry services software related with marking orders, transit permit and quarries etc for efficient delivery to public would be adopted. All the check posts and offices will be connected through network and web based monitoring and evaluation.

##### **4.3 SURVEY AND DEMARCATION OF FOREST AREAS:**

With a view to protect the forest resources from encroachment all the reserve forests would be surveyed and demarcated with angle iron concrete boundary pillars. About 3000 more boundary pillars are proposed to be erected till 2015.

##### **4.4 STUDY OF IMPACTS OF CLIMATE CHANGE ON THE HIMALAYAN ECOSYSTEM AND USING OPPORTUNITIES OF CARBON FINANCE:**

The Department of forests has already opened a climate change wing for coordinating all the climate change related activities. It is already in process of preparing a remote sensing based baseline for vegetation carbon pool. In addition it is proposed that a high resolution climate data set would be prepared for the Sikkim. This information will be used to recommend measures for climate change adaptation and methods for monitoring climate change impacts.



## 5. SILVICULTURE, SERICULTURE AND UTILIZATION:



Sikkim to go Fully Organic by 2015

### 5.1 SILVICULTURE:

- In collaboration with institutes of national and international repute following activities will be taken up in silviculture sector:
- Identification, demarcation and management of seed stands/seed production areas of multipurpose economically important trees for improved seed.
- Protection and management of important Species like *Quercus*, *Castanopsis*, Conifer, Maple, Rhododendron, Champ, Sal, Chirpine etc. of low, middle and upper hill forests.
- Identification and Management of important fodder species of Sikkim.
- Supplementary regeneration trial of indigenous broad leaved tree species in gaps existing in the monoculture Dhuppi Plantation.
- Survey and ecological studies of impact of exotic species and preparation of status report on these species introduced in Sikkim.
- Development of techniques for seed harvesting collection, storages, treatment and testing for variability and germination
- Identification of existing and potential weeds like *Mikania*, *Eupatorium*, *Lantana* etc. and devising effective control at various stages of growth.
- Studies on development of afforestation techniques of cold desert/high altitude regions

- Studies on seed biology and phenology of rare, endangered and threatened species in selected regions.
- Entomological studies on the forest insect-pest of seeds in nurseries, plantation and natural forests and their control.
- Pathological studies on important tree species in natural forests, nurseries, man-made forests and their identification and control.
- Growth and yield research on sample plot in natural forest and man-made forest.
- Studies on fiber yielding plants growing in the forest areas.

## 5.2 SERICULTURE :

In the next ten years, number of sericulture stakeholders in the state shall increase in manifolds. Art of Mulberry, Eri and Mugaculture as such, or in the form of new technology would be expanded and popularized in every corner of the state. This would increase the demand of diversification in its practices. State would go for adopting new means of providing appropriate technological support in forward and backward linkages like the establishment of rational cocoon marketing centre, organizing more seed centre called grainages, maintenance of germplasm banks in both mulberry and silkworms, establishment of Silk reeling and spinning centre and finally the silk weaving and designing centre in the state.

## 6 DEVELOPMENT OF WETLANDS:

The most of the wetlands of Sikkim have religious importance. They serve as source of water in many cases. A comprehensive plan for their development would be made. The lakes would be developed as eco-tourism



Khecheopalri Lake

destinations. The restoration measures like desilting, providing silt detention structures, weed control, abatement of pollution, awareness etc. are being adopted. Khecheopalri (West Sikkim), Tsomgo (East Sikkim) and Gurudongmar (North Sikkim) wetland complexes would be attempted to be included in Ramsar Site. A State level River Conservation Authority is proposed to be set up for the State of Sikkim with the objective to keep the rivers of Sikkim pollution free and to maintain healthy aquatic ecosystem. The concept of Eco-protection of river/rivulets and the mechanism for 'Pay when you litter' against any dumping garbage and waste material will be developed. All the villages/ residential areas adjacent to main streams and rivers will be actively involved in the management and conservation of river by formation of River Conservation Protection Force. Base line data for water quality of all water bodies, bio-indicators and human habitation effect will be collected and GIS mapping will be done for all water bodies in Sikkim.

## **7. ENVIRONMENT AND POLLUTION CONTROL AND ENVIRONMENTAL INFORMATION SYSTEM (ENVIS):**

### **7.1 State Pollution Control Board envisages the :**

- Construction of Parivesh Bhawan to house the administrative and laboratory blocks of the State Pollution Control Board-Sikkim.
- Regular monitoring of water quality of state under National Water Monitoring Programme.
- Research and development in the field of prevention, control and abatement of pollution in the State and dissemination of information.
- Single window clearance for green industries.
- Establishment of automatic air pollution monitoring station in all major towns of the State.

### **7.2 Till 2015 the ENVIS envisages**

- To build up a repository and dissemination centre in Environmental Science and Engineering to support e-governance
- To gear up modern technologies of information acquisition, processing, storage, retrieval and dissemination of environmental nature.
- To support and promote research, development and innovation in environmental information technology. To extend research activities in environment related issues, on the local effects of global climate change.
- To provide national environmental information service relevant to present needs and capable of development to meet the future needs of the users, originators, processors and disseminators of information.
- To build up storage, retrieval and dissemination capabilities with the ultimate objective of disseminating information speedily to the users, policy makers, decision makers, research scholars, etc.
- To promote national and international cooperation and liaison for exchange of environment related information.
- To extend and strengthen the status of Indian State-level Basic Environment Information Database (ISBEID).
- To promote, support and assist environment education and personnel training programmes designed to enhance environmental information processing and utilizing capabilities. To reach out to every rural areas in Sikkim via Non-Governmental Organizations (NGOs) in the field of environment and raise the awareness level of the people through National Environment Awareness Campaign.
- To strengthen the network of Eco-clubs in all the schools in Sikkim; to enable wider participation of schools for the Green School Programme.
- To welcome new fields of activities/campaign in the of environment related issues.

- To promote and exchange of information amongst developing countries.
- To bring out an annual bi-lingual publication 'State of Environment Report'; bi-annual newsletters; prepare pamphlets for the environment activities of the department.
- To bring out state's compendium on environment statistics on annual basis.

#### **8. KNOWLEDGE GENERATION AND ENVIRONMENTAL EDUCATION:**

The Department of Forests is running number of programmes for environmental amelioration. The students will be targeted in a big way for raising environmental awareness. Environmental education shall be taken to all the schools and colleges. National Green Corps (NGC) will be formed in all the Secondary and Senior Secondary level Schools for environmental education and creating awareness with the financial support from Sikkim Ecology Fund on regular basis. Several environmental activities will be designated under this programme and implemented in co-ordination with the Human Resource Development Department with the vision to create 100% “environmentally conscious citizens”.

Similarly dissemination of biodiversity and best practices information would be done by

- Development of Jawaharlal Nehru Botanical Garden, Rumtek in to the Centre of Excellence for tree identification of North East India. Special section for Moss, Ferns and pre-historic plants will be made to bring a special kind of attraction and one of kind in India.
- Establishment of Natural History Museum at Marchak
- Development of State Forest Museum in East Sikkim and
- Establishment of Sikkim Biodiversity Centre and production and Dissemination of booklets of best practices.

#### **AUTHOR:**

**Sonam Topden Lachungpa, IFS**

PCCF-cum-Forest Secretary

Department of Forest, Environment and Wildlife Management,

Forest Secretariat, Deorali,

Gangtok, Sikkim - 737101, India

Phone: +91 9434755485

Fax: +91 3592 281778