

## **Chapter-1**

### **INTRODUCTION:**

Sikkim is a small mountainous State in the Eastern Himalayan region extending approximately 114 Km from North to South and 64 Km from East to West, having a total area of 7096 sq.km only. The State is situated between 88°00'58" and 88°55'25" East longitudes and 27° 04' and 28° 07'48" North latitudes. It is surrounded by vast stretches of Tibetan plateau in North, Chumbi valley & Kingdom of Bhutan in the East, Darjeeling District of West Bengal in South and Kingdom of Nepal in West. Over one third of the total area of the State remains covered by snow in winter and a population of 5.42 lakhs on 2001, the bulk of which resides in rural areas and is heavily dependent on forest resources. The entire State comprises of hilly terrain with forests on hilltops and valleys. Over 81% of the total geographical area of the State is under the administrative control of the Forests, Env. & Wildlife Management Department. Sikkim is endowed with a variety of natural flora and fauna and is a paradise of nature lover, botanist, environmentalist, conservationist and trekkers. The State houses over 400 species of flowering plants, 300 species of ferns and its allies, 11 species of oaks, 8 species of tree ferns, 40 species of primulas and 20 species of bamboo. The faunal wealth of Sikkim comprises of 144 species of mammals, 600 species of birds, 400 species butterflies and moths and many species of reptiles. Several species of medicinal plants and herbs are found throughout the State.

#### STATE OF FOREST REPORT

<b><u>Forest Cover:</u></b>	
a. Very Dense Forest	500 Sq.Km.
b. Moderately Dense Forest	2161 Sq.Km.
c. Open Forest	696 Sq.Km.
d. Tree Cover	20 Sq.Km.
Total -	3377 Sq.Km.
Of State's Geographic Area	47.59%
Of Country's Geographic Area	0.10%
Of Country's Forest & Tree Cover	0.49%
Per Capita Forest & Tree Cover	0.63 ha.

## Chapter – 2

### KEY BIODIVERSITY STATISTICS OF SIKKIM

Geographical Area	7096 sq.km.
Capital	Gangtok
No. of Districts	4
No. of Sub-Divisions	9
Climate	Tropical, Temperate and Alpine
State Flower	Nobile Orchid- <i>Dendrobium nobile</i>
State Tree	<i>Rhododendron niveum</i>
State Animal	Red Panda – <i>Ailurus fulgens</i>
State Bird	Blood Pheasant – <i>Ithaginis cruentus</i>
Protected Area Network	2183.10 sq.km (30.77%)
No. of important Mountains & Peaks	28
No. of Glaciers	84
No. of Lakes (Wetlands)	227
No. of Hot Springs	9
No. of Rivers & Streams	104
Major Rivers of the State	Teesta and Rangit

#### No. of Species:

Flowering Plants – 500	Mammals – 144
Rhododendron – 36	Birds – 552
Orchids – 550	Reptiles – 33
Conifers – 16	Amphibians – 16
Ferns & allies – 362	Fishes – 48
Tree Ferns – 9	Butterflies – 650
Bamboos – 28	
Oaks – 11	
Medicinal Plants – 424	

#### **Increase of Forest Cover:**

Year	Recorded Forest Area (sq.km)	% total geographical area
1975	2650	37.34
1987	2756	38.84
1995	3127	44.06
2005	3289	46.35
2009	3377	47.59

### Chapter -3

#### News & Events during 2009 to 2010.

##### **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' Responses to maintain their environment.
- ❖ An innovative and unique programme conceptualized by the Honorable Chief Minister called 'Ten Minutes to Earth, 10 Minutes to Greenery' was launched and implemented on 15<sup>th</sup> July 2009 with wide public participation in an unprecedented scale. The event is now an annual ritual.
- ❖ Green School Programme (GSP) launched at the state level in Sikkim, the first of its kind in the country. Therein, three Government schools bagged national award based on all India ratings.
- ❖ 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.
- ❖ Terms of Reference (TOR) signed between department and Japanese International Cooperation Agency (JICA) funded externally aided project with focus to promote ecotourism and natural resource conservation.
- ❖ Declaration of Sidkeong Tulku Bird Park at Rabdentse, Gyalshing, West Sikkim, Rangrang Butterfly Park under creation in North Sikkim.

##### **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 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.
- ❖ "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 HCM's unique initiative "10 minutes to Greenery" which was launched in 2009.
- ❖ Sikkim Delegate of Students, teachers and Office-in-charge of National Green Corps (NGC) participated in the first ever National Conference of Children and Youth held at Hyderabad during August 2010. The activities of Sikkim NGC Eco Club Students were observed as the Greenest of Greens in the country.

## Chapter-4

### Area Statistics

Over 84% of the total geographical area of the state is under the administrative control of the forest department which comprises of over 82% RF and 2% Khasmal and Gaucharan. Sikkim is endowed with a variety of natural flora and fauna and is a paradise of nature lover, botanist, environmentalist, conservationist and trekkers. The state houses over 400 species of flowering plants, 300 species of ferns and its allies, 11 species of oaks, 8 species of tree ferns, > 500 species of Orchids, 37 species of Rhododendrons, 40 species of Primulas, and 28 species of Bamboos belonging to 09 genera. The faunal wealth of Sikkim comprises of 144 species of mammals, 600 species of birds, 700 species butterflies and un-quantified moths and many species of reptiles and amphibians as well as 48 species of fishes. More than 400 species of medicinal plants and herbs are found throughout the state.

#### AREA STATISTICS FOR SIKKIM- TOTAL STATE (IN SQ. KMS.)

SL. No	CLASS	RESERVE FOREST	REVENUE BLOCK	TOTAL	%OF TOTAL
1.	CROP LAND (TERRACED./SEMI TERRACED)	0.00	604.85	604.85	8.52
2.	FALLOW/ SCRUB IN REVENUE BLOCKS	0.00	155.69	155.69	2.19
3.	SAL DENSE FOREST	5.30	0.77	6.07	0.09
4.	SAL OPEN FOREST	15.93	1.54	70.47	0.25
5.	SAL DEGRADED FOREST	3.32	0.71	4.03	0.06
6.	MIXED DENSE FOREST	464.46	138.88	603.34	8.50
7.	MIXED OPEN FOREST	433.37	333.38	766.75	10.81
8.	MIXED DEGRADED FOREST	194.56	235.06	429.62	6.05
9.	DENSE CONIFER FOREST	351.94	16.14	368.08	5.19
10.	OPEN CONIFER FOREST	340.63	21.55	362.18	5.10
11.	DEGRADED CONIFER FOREST	156.89	16.30	173.19	2.44
12.	OAK-RHODODENDRON FOREST	100.34	26.24	126.58	1.78
13.	SCRUBS IN RESERVE FOREST	101.87	0.00	101.87	1.44
14.	FOREST BLANKS	90.56	0.00	90.56	1.28
15.	ALPINE SCRUB	611.44	27.72	639.16	9.01
16.	ALPINE PASTURES	431.32	0.00	431.32	6.08
17.	ALPINE BARREN	815.80	2.35	818.15	11.53
18.	SNOW	1018.23	5.41	1023.64	14.43
19.	GLACIERS	208.23	0.00	208.23	2.93
20.	LAKES	32.30	0.70	33.00	0.47
21.	RIVERS/MAJOR STREAMS	31.81	32.50	64.31	0.91
22.	DRY RIVER BEDS	31.49	9.10	40.59	0.57
23.	BUILT –UP AREA	0.30	3.24	3.54	0.05
24.	LAND SLIDE AREAS	5.37	5.16	10.53	0.15
25.	MISCELLANEOUS	6.93	6.30	13.23	0.19
	<b>Total</b>	<b>5452.39</b>	<b>1643.59</b>	<b>7095.98</b>	<b>100.00</b>

**District-wise Forest Area in sq km**  
**Forest & Tree Cover**

District	Geographic area	2007 Assessment				Percent of G.A	Scrub
		Very dense forest	Mod. Dense forest	Open forest	Total		
East Sikkim	954	162	411	126	699	73.27	70
North Sikkim	4,226	1325	890	290	1315	31.12	202
South Sikkim	750	93	371	107	571	76.13	3
West Sikkim	1,166	110	489	173	772	66.21	81
<b>Total</b>	<b>7,096</b>	<b>500</b>	<b>2161</b>	<b>696</b>	<b>3357</b>	<b>47.31</b>	<b>356</b>

Category	Area in sq km	% of Geographical Area
Tree Cover (Forest in Pvt. Lands)	20	0.28
Forest Cover (all categories of Forest)	3357	47.31
<b>TOTAL Tree Cover in Forest &amp; Pvt. Land</b>	<b>3377</b>	<b>47.59</b>

**Forest cover in the North – Eastern States**

State/UT	Geographic Area	Forest Cover (2005 Assessment)				Percent of G.A	Change as compared to 2003 Assessment in Forest Cover in sq km
		Very Dense Forest	Mod. Dense Forest	Open Forest	Total Forest		
Arunachal Pradesh	83,743	14,411	37,977	15,389	67,777	80.93	85
Assam	78,438	1,444	11,387	14,814	27,645	35.24	-90
Manipur	22,327	923	5,541	10,622	17,086	76.53	-173
Meghalaya	22,429	338	6,808	9,842	16,988	75.74	63
Mizoram	21,081	133	6,173	12,378	18,684	88.63	101
Nagaland	16,579	236	5,602	7,881	13,719	82.75	-296
Tripura	10,486	61	4,969	3,125	8,155	77.77	32
<b>Sikkim</b>	<b>7,096</b>	<b>500</b>	<b>2161</b>	<b>696</b>	<b>3357</b>	<b>47.31</b>	<b>95</b>

**Chapter -5**

**MANPOWER:**

SL.NO.		DESIGNATION	IN POSITION	
<b>I</b>	<b>IFS CADRE</b>			
	01	PCCF-cum-Secretary	01	
	02	Additional P.C.C.F.	03	
	03	Chief Conservator of Forest	03	
	04	Conservator of Forest	03	
	05	Deputy Conservator of Forest	06	
	06	IFS Probationers	02	
	08	On Central Deputation	01	
	09	On State Deputation	08	
	10	Vacant post	02	
<b>A. TOTAL IFS (GAZETTED)</b>			<b>30</b>	
<b>II</b>	<b>SFS CADRE</b>			
	01	Director	01	
	02	Additional Director of Forests	01	
	03	Joint Directors	06	
	04	Deputy Conservators	32	
	05	Assistant Conservator of Forests	64	
	<b>A. Gazetted</b>			<b>104</b>
	06	Range Officer	75	
	07	Block Officer	113	
	08	Head Forest Guard	50	
	09	Forest Guard	251	
	<b>B. Non-Gazetted</b>			<b>488</b>
	<b>Total (A+B)</b>			<b>592</b>
<b>III</b>	<b>SERICULTURE</b>			
	01	Director	01	
	02	Joint Director	01	
	03	Deputy Director	01	
	04	Assistant Director	01	
	<b>A. Gazetted</b>			<b>04</b>
	05	Sericulture Range Officer	01	
	06	Sericulture Block Officer	02	
	<b>B. Non-Gazetted</b>			<b>03</b>
	<b>Total Sericulture (A+B)</b>			<b>07</b>
<b>IV</b>	<b>STATISTICAL SERVICE</b>			
	01	Joint Director	02	
	02	Deputy Director	02	
	03	Assistant Director	01	
	<b>A. Gazetted</b>			<b>04</b>
	04	Statistical Inspector	05	
	05	Statistical Investigator	02	
	<b>B. Non-Gazetted</b>			<b>08</b>
	<b>Total (A+B)</b>			<b>12</b>
			<b>640</b>	

<b>V</b>	<b>FINANCE AND ACCOUNTS SERVICE</b>		
	01	Additional Director of Accounts	01
	02	Chief Accounts Officer	01
		Sr.Accounts Officer	02
	03	Accounts Officer	01
	<b>A.</b>	<b>Gazetted</b>	<b>05</b>
	04	Senior Accountant	03
	05	Accountant	07
	06	Junior Accountant	26
	07	Accounts Clerk	09
	<b>B.</b>	<b>Non-Gazetted</b>	<b>45</b>
	<b>Total (A+B)</b>	<b>50</b>	
<b>VI</b>	<b>STATE CIVIL SERVICE</b>		
	01	Special Secretary	01
	02	Joint Secretary	01
	03	Under Secretary	02
	<b>A.</b>	<b>Gazetted</b>	<b>04</b>
	04	Office Superintendent	04
	05	Head Assistant	04
	06	Upper Division Clerk	18
	07	Lower Division Clerk	51
	<b>B.</b>	<b>Non-Gazetted</b>	<b>77</b>
	<b>Total (A+B)</b>	<b>81</b>	
<b>VII</b>	<b>OTHERS</b>		
	01	Chief Scientist	01
	02	Senior Research Officer	01
	03	Deputy Director(WL & Zoo)	01
	04	Scientist 'B	01
	05	Assistant Scientific Officer	01
	06	Deputy Director(NTFP)	01
*	07	Assistant Engineer (Civil)	01
*	08	Assistant Engineer (Environment)	01
	<b>A.</b>	<b>Gazetted</b>	<b>08</b>
	09	Senior Technical Assistant	02
	10	Cartographer	01
	11	Surveyor	01
	12	Assistant surveyor	01
	13	Tracer	01
	14	Draftsmen	03
	15	Junior Engineer (Civil)	02
	16	Tally Clerk	01
	17	Sub-Inspector (Wireless)	01
	18	Supervisor	02
	19	Lab Attendant	01
	20	Vet. Compounder	01
	21	Bearer	01

	22	Chowkidar	25
	23	Cook	02
	24	Peon	49
	25	Mali	21
	26	Driver	42
	27	Pipe Fitter	01
	<b>B. Non-Gazetted</b>		<b>157</b>
	<b>Total (Other A+B)</b>		<b>165</b>
<b>VIII</b>	<b>STENOGRAPHERS SERVICE</b>		
	01	Principal Private Secretary	01
	02	Senior Private Secretary	01
	03	Private Secretary	03
	<b>A. Gazetted</b>		<b>05</b>
	04	Stenographer	07
	<b>B. Non-Gazetted</b>		<b>07</b>
	<b>Total - (A+B)</b>		<b>307</b>

**ABSTRACT:**

<b>SL.NO</b>	<b>PARTICULARS</b>	<b>IN POSITION</b>
1	TOTAL GAZETTED OFFICERS	164
2	TOATL NON-GAZETTED EMPLOYEES	785
3	WORK-CHARGED EMPLOYEES	5
4	ON CONSOLIDATED PAY	4
5	MUSTER ROLL WORKERS	691
6	ADHOC	3
7	<b>GRAND TOTAL -</b>	<b>1652</b>

**Source: Nominal Roll 2011-12 Plan , Non-Plan**



**Chapter-6.**

**Statement of revenues realized during last Twelve years.**

Sl.No.	Financial Year	Estimated ( in lakhs)	Realised (in lakhs)	Percentage	Remarks
1	1997-1998	170.00	137.76	81.04	Shortfall 18.98 %
2	1998-1999	140.70	159.63	113.45	Excess 13.45 %
3	1999-2000	145.00	411.63	283.61	Excess 183.61 %
4	2000-2001	145.00	639.32	440.91	Excess 340.91 %
5	2001-2002	200.00	664.77	332.39	Excess 232.39 %
6	2002-2003	438.00	7129.72	164.32	Excess 64.32 %
7	2003-2004	550.00	723.4	131.53	Excess 31.53 %
8	2004-2005	550.00	787.45	143.17	Excess 43.17 %
9	2005-2006	700.00	817.66	11.81	Excess 16.81 %
10	2006-2007	800.00	802.00	100.25	Excess .25%
11	2007-2008	700.50	800.26	114.24	Excess 14.24%
12	2008-2009	800.00	848.09	106.01	Excess 6.01%
13	2009-2010	1000.00	879.00	87.90	Shortfall 12.1%

**STATEMENT OF EXPENDITURE**

SECTORS	ACTUAL EXPENDITURE				
	PLAN	C.S.S	FCA	NEC	N-PLAN
<b>Soil and water conservation</b>					
2003-04	<b>90.65</b>	NIL			119.97
2004-05	<b>79.59</b>	NIL			133.3
2005-06	<b>88.07</b>	NIL			139.22
2006-07	<b>84.05</b>	NIL			148.37
2007-08	<b>97.07</b>	NIL			149.04
2008-09	<b>90.04</b>	<b>358.14</b>			<b>173.37</b>
2009-2010	<b>101.35</b>	<b>NIL</b>			<b>289.05</b>
<b>Forestry &amp; Wildlife</b>					
2003-04	<b>623.66</b>	<b>352.86</b>			<b>949.91</b>
2004-05	<b>65488</b>	<b>296.23</b>			<b>1092.09</b>
2005-06	<b>662.54</b>	<b>329.96</b>			<b>1195.85</b>
2006-07	<b>946.72</b>	<b>484.61</b>			<b>1189.17</b>
2007-08	<b>1256.45</b>	<b>342.61</b>			<b>1273.47</b>
2008-09	<b>1251.20</b>	<b>284.50</b>			<b>1442.81</b>
2009-2010	<b>1771.84</b>	<b>282.29</b>	<b>2.22</b>	<b>19.81</b>	<b>2539.46</b>
<b>Ecology &amp; Environment</b>					
2003-04	<b>29.29</b>	<b>2.26</b>			-
2004-05	<b>28.43</b>	<b>1.56</b>			-
2005-06	<b>30.03</b>	<b>2.26</b>			-
2006-07	<b>36.76</b>	<b>18.10</b>			-
2007-08	<b>52.28</b>	<b>34.35</b>			-
2008-09	<b>52.53</b>	<b>46.98</b>			<b>24.23</b>
2009-2010	<b>54.44</b>	<b>80.66</b>			<b>235.29</b>

## **Chapter-7**

### **ENVIRONMENTAL INFORMATION SYSTEM (ENVIS CENTRE) SIKKIM “On Status of Environment and Related issues”**

**Official Website:** [www.sikenvis.nic.in](http://www.sikenvis.nic.in) **Email:** [sik@envis.nic.in](mailto:sik@envis.nic.in)

#### **Introduction**

Established in 2002 and fully operational by 2006, Environmental Information System (ENVIS) is a plan programme under the Ministry of Environment & Forests, Government of India.

ENVIS is a distributed environmental information network with the mandate of collection, collation, storage, retrieval and dissemination to varying users, which include decision-makers, researchers, academicians, policy planners, research scientists, etc. The Focal Point of ENVIS is located in the Ministry that coordinates the activities of all the ENVIS network partners to make ENVIS a web-enabled comprehensive information system.

#### **Subject Area**

“On Status of Environment & Related Issues”

#### **Objectives of ENVIS**

##### **Long Term Objectives:**

- To build up a repository and dissemination centre in Environmental Science and Engineering
- To gear up the 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.

##### **Short Term objectives:**

- 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.
- To promote national and international cooperation and liaison for exchange of environment related information.
- To promote, support and assist education and personnel training programmes designed to enhance environmental information processing and utilizing capabilities.

To promote and exchange of information amongst developing countries

#### **Services**

- >> Website: [www.sikenvis.nic.in](http://www.sikenvis.nic.in)
- >> Bi-annual Newsletter (PANDA)
- >> E-Newsletters
- >> State of Environment Report
- >> ISBEID (Indian State-level Basic Environment Information Database)
- >> Library Facility
- >> Online/ in-person Query Services
  
- >> Environment Awareness Programmes

- >> Other Publications/Reports
- >> IT support/ LAN/ Intranet/Internet maintenance and services

**Other Annual Activities**

- >> National Environment Awareness Campaign
- >> National Green Corps Programme
- >> Green School Programme

**Archives of Publication**

Our centre is also responsible to maintain an extensive collection of publications (both the host organization and the centre itself). So far, the collection of our centre is categorized as below:

- ENVIS Quarterly Newsletter
- ENVIS Pamphlets
- National Environment Awareness Campaign
- National Green Corps
- State Green Mission
- Annual Plan Reports
- State of Environment Report.
- State Environment Pollution Report.
- Case Studies of Landslide Treatment & Erosion Control Work in Sikkim
- Newsletters from other network partners.
- Journals of Hill Research.

Year	Financial Grant-in-aid received from the ministry	Activities /achievements
2006-07	Rs. 5,25,000	<ul style="list-style-type: none"> <li>➤ Development of database</li> <li>➤ ENVIS Website officially launched.</li> <li>➤ Database application for Library management developed and updated on the ENVIS website.</li> <li>➤ State Environmental Report data collection started.</li> <li>➤ ENVIS Centre actively participated in various occasion of the Host Department.</li> <li>➤ NEAC activities undertaken by ENVIS.</li> </ul>
2007-08	Rs. 6,09,000	<ul style="list-style-type: none"> <li>➤ The website (Home page: www.sikenvi.nic.in) was re-structured to provide better flexibility and reliable flow of data.</li> <li>➤ ENVIS Newsletter Issue 1 published.</li> <li>➤ Report on Treatment of Landslide &amp; Erosion Control under TDET Project – South Sikkim prepared</li> <li>➤ State of Environment Report Prepared for the first time.</li> <li>➤ ENVIS Newsletter Issue 2 published.</li> </ul>
2008-09	Rs. 6,52,400	<ul style="list-style-type: none"> <li>➤ ENVIS Center Sikkim has also been assisting the State Environment Agency in implementing MoEF's (CSS) programmes such as National Environment Awareness Campaign (NEAC), National Green Corps (NGC) and Van Vigyan Kendra (VVK).</li> <li>➤ Frequent updating of contents in the ENVIS website.</li> <li>➤ <b>State of Environment Report 2007 Published</b></li> <li>➤ Compilation and designing of EIA &amp; EMP of Rangit II HEP (60 MW). ENVIS Centre assisted the host department and Sikkim Power Ventures Pvt. Ltd. in preparation of the reports.</li> <li>➤ A report on Treatment of Landslide &amp; Erosion Control under TDET Project – West Sikkim prepared.</li> <li>➤ Newsletter Vol. II Issue 1 Published highlighting the following achievements:</li> </ul>

		<ul style="list-style-type: none"> <li>➤ <b>Workshop:</b> Sikkim ENVIS organized a sensitization workshop for NGOs and Schools on National Environment Awareness Campaign 2008-09 on the theme “Climate Change” at Gangtok, Sikkim</li> <li>➤ Various publication for the year <ul style="list-style-type: none"> <li>• Pamphlets on National Bamboo Mission and State Green Mission prepared.</li> <li>• <i>State of Environment Report 2007</i></li> <li>• <i>Awareness material (pamphlet) on National Environment Awareness Campaign 2008-09 on the theme “Climate Change”.</i></li> <li>• <i>Awareness material (booklet) on Solid Waste Management</i></li> <li>• <i>State Green Mission Phase III Broacher</i></li> <li>• <i>Booklet on Forest Centenary Celebrations 2009.</i></li> <li>• <i>Pamphlet on Sidkeong Tulku Bird Park</i></li> </ul> </li> </ul>
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2008-09	Rs. 6,52,400	<ul style="list-style-type: none"> <li>➤ ENVIS Center Sikkim has also been assisting the State Environment Agency in implementing MoEF’s (CSS) programmes such as National Environment Awareness Campaign (NEAC), National Green Corps (NGC) and Van Vigyan Kendra (VVK).</li> <li>➤ Frequent updating of contents in the ENVIS website.</li> <li>➤ <b>State of Environment Report 2007 Published</b></li> <li>➤ Compilation and designing of EIA &amp; EMP of Rangit II HEP (60 MW). ENVIS Centre assisted the host department and Sikkim Power Ventures Pvt. Ltd. in preparation of the reports.</li> <li>➤ A report on Treatment of Landslide &amp; Erosion Control under TDET Project – West Sikkim prepared.</li> <li>➤ Newsletter Vol. II Issue 1 Published highlighting the following achievements:</li> <li>➤ <b>Workshop:</b> Sikkim ENVIS organized a sensitization workshop for NGOs and Schools on National Environment Awareness Campaign 2008-09 on the theme “Climate Change” at Gangtok, Sikkim</li> <li>➤ Various publication for the year <ul style="list-style-type: none"> <li>• Pamphlets on National Bamboo Mission and State Green Mission prepared.</li> <li>• <i>State of Environment Report 2007</i></li> <li>• <i>Awareness material (pamphlet) on National Environment Awareness Campaign 2008-09 on the theme “Climate Change”.</i></li> <li>• <i>Awareness material (booklet) on Solid Waste Management</i></li> <li>• <i>State Green Mission Phase III Broacher</i></li> <li>• <i>Booklet on Forest Centenary Celebrations 2009.</i></li> <li>• <i>Pamphlet on Sidkeong Tulku Bird Park</i></li> </ul> </li> </ul>
2009-10	Rs. 6,52,000	<ul style="list-style-type: none"> <li>➤ ENVIS Centre have been renovated and upgraded with modern facelift facilities to strengthen the work environment.</li> <li>➤ Centre released “Climate change” poster; released a Report on “Impact of Landslide and Erosion Control Treatment” West Sikkim. Panda Biannual Newsletter Published and Launched.</li> <li>➤ ENVIS Center Sikkim has also been working in close coordination with the host and other regional centres like CEE in implementing MoEF sponsored programmes such as National Environment Awareness Campaign (NEAC) and National Green Corps (NGC).</li> <li>➤ ENVIS Centre launched the Gobar Times Green School Programme (GTGSP) in Sikkim at a state level, the first of its kind in the state. ENVIS team coordinated the programme and 140 government schools were registered for the year 2009.</li> <li>➤ Programme Officer attended the Environment Educators Meet and Gobar Times Green School Award Ceremony at New Delhi. ENVIS centre received three national awards (namely Top 10 School and best manager’s award) on behalf of the schools participating in GTSGP.</li> </ul>

## Chapter -8

### PRODUCTION, PRICE & VALUE OF FOREST PRODUCT:

2004-2005

Sl. No	Item	Rate (Rs.)/ Qty.	North		East		South		West		Total	
			Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
1	Industrial Wood		-	-								
	a) Hard Wood				3266.88	7.35	-	-	-	-	3266.88	7.35
	b) Soft Wood		-	-	584.74	0.88	-	-	-	-	584.74	0.88
2	Fire Wood		-	-	169.15	0.85	-	-	-	0.19	169.15	1.04
3	Charcoal		-	-	138	0.21	-	-	-	-	138	0.21
4	a) Silk (Cocoon green)		-	-	1765	0.49	-	-	-	-	1765	0.49
	b) Muga		-	-	11106	0.04	-	-	-	-	11106	0.04
	c) Eri		-	-	338	0.09	-	-	-	-	238	0.09
5	a) Sand		138606	0.90	2608003	16.95	619829	4.03	333150	2.17	3699588	24.05
	b) Stone		330958	1.82	1659638	9.13	557082	3.06	678312	3.73	3225990	17.74
	c) Stone Chips		65950	0.72	4741822	52.16	-	5.10	261400	2.88	5069172	60.86
6	Royalty collection of sand & stones			15.95		85.21	-	-	-	-	-	101.16
7	Royalty collection of other Misc. items			6.66		69.58		1.68		3.38		81.30

**PRODUCTION, PRICE & VALUE OF FOREST PRODUCT:**

2005-2006:

Sl. No.	Item	Rate (Rs.)/ Qty.	North		East		South		West		Total	
			Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
1	Industrial Wood		-	-	-	-						
	a) Hard Wood		-	-	3685.40	5.53	NIL	-	NIL	-	3685.40	5.53
2	Fire Wood		-	-	143.45	0.72	-	-	-	0.30	143.45	1.02
3	Charcoal		-	-	13	0.19	-	-	-	-	13	0.19
4	a) Silk (Cocoon green)		-	-	1604.08	0.33	-	-	-	-	1604.08	0.33
	b) Muga		-	-	16985.00	0.07	-	-	-	-	16985.00	0.07
	c) Eri		-	-	231	0.12	-	-	-	-	231	0.12
5	a) Sand		138606	0.90	7824009	50.86	-	-	-	-	7962615	51.76
	b) Stone		330958	1.82	5476806	30.12	-	-	-	-	5807764	31.94
	c) Stone Chips		660649	0.73	35900000	394.90	-	14.47	-	13.49	36560649	423.59
6	Royalty collection of sand & stones,GREF / BRO			12.33		73.78						86.11
7	Royalty collection of other Misc. items			6.26		213.61		1.72		21.50		243.09

**PRODUCTION, PRICE & VALUE OF FOREST PRODUCT:**

2006-2007:

Sl. No.	Item	Rate (Rs.)/ Qty.	North		East		South		West		Total	
			Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
1	Industrial Wood		-									
	a) Hard Wood											
	b) Soft Wood		-		1876.63	2.81				0.21	1876.63	2.81
2	Fire Wood		-		224	1.21					224	1.21
3	Charcoal		-									
4	a) Silk (Cocoon green)		-		493	0.31					493	0.31
	b) Muga		-		12188	0.05					12188	0.05
	c) Eri		-		309	0.25					309	0.25
5	a) Sand				6730000	43.74					6730000	43.74
	b) Stone				5460800	30.03					5460800	30.03
	c) Stone Chips			6.71	28750000	316.25		17.95		12.38	28750000	353.29
6	Royalty collection of sand & stones					80.98						80.98
7	Royalty collection of other Misc. items			10.25		217.65		8.20		3.12		239.22

**PRODUCTION, PRICE & VALUE OF FOREST PRODUCT:**

2007-2008:

Sl. No.	Item	Rate (Rs.)/ Qty.	North		East		South		West		Total	
			Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
1	Industrial Wood		-	-								
	a) Hard Wood				1082.52	1.91					1082.52	1.91
	b) Soft Wood		-	-	-	-	-	-	-	-	-	-
2	Fire Wood		-	-	90.80	0.56	-	-	-	-	90.80	0.56
3	Charcoal		-	-	-	-	-	-	-	-	-	-
4	a) Silk (Cocoon green)		-	-	659	0.43	-	-	-	-	659	0.43
	b) Muga		-	-	4294	0.02	-	-	-	-	4294	0.02
	c) Eri		-	-	150	0.14	-	-	-	-	150	0.14
5	a) Sand		254323	1.78	11445900	74.40	28570	20.00		3.23	11728793	99.41
	b) Stone		860710	5.16	9999890	55.00	8300	4.98		6.6	10868900	6.5
	c) Stone Chips		1660	0.02			5540	6.65		3.5	7200	10.17
6	Royalty collection of sand & stones						0.90					0.90
7	Royalty collection of other Misc. items						4.41		7.50			11.91



**PRODUCTION, PRICE & VALUE OF FOREST PRODUCT:**

2008-2009:

Sl. No.	Item	Rate (Rs.)/ Qty.	North		East		South		West		Total	
			Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
1	Industrial Wood											
	a) Hard Wood											
	b) Soft Wood				148.65	0.22					148.65	0.22
2	Fire Wood				149.65	0.81					149.65	0.81
3	Charcoal											
4	a) Silk (Cocoon green)				565	0.42					565	0.42
	b) Muga				14113	0.08					14113	0.08
	c) Eri				58800	0.05					58800	0.05
5	a) Sand		629899	44.090	11970563	77.80	28570.00	20.00		7.12	12629032	148.92
	b) Stone		367438	22.05	11385888	62.62	8300.00	4.98		8.5	11761626	98.15
	c) Stone Chips		61239	7.35			5540.00	6.65		7.50	66779	21.75
6	Royalty collection of sand & stones											
7	Royalty collection of other Misc. items					38.53						38.53

**PRODUCTION, PRICE & VALUE OF FOREST PRODUCT:**

2009-2010:

Sl. No.	Item	Rate (Rs.)/ Qty.	North		East		South		West		Total	
			Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
1	Industrial Wood	350/Cft.	-		647.21	2.27					647.21	2.27
	a) Hard Wood				1758.08	2.71					1758.08	2.71
	b) Soft Wood		-									
2	Fire Wood	540/Pile	-		150.5	0.82					150.5	0.82
3	Charcoal		-									
4	a) Silk (Cocoon green)		-		269	-	170	-	116	-	555.60	0.51
	b) Muga		-		565	-	1436		2687		4688	0.04
	c) Eri				32	-	128		29		190.10	0.16
5	a) Sand		353465	24.74	NR		39997.00	28.00	NR		393462.00	52.74
	b) Stone		824753	49.49	NR		14222.00	8.53	NR		838975.00	58.02
	c) Stone Chips		68729	8.25	NR		6378.00	7.65	NR		75107.00	15.90
6	Royalty collection of sand & stones											
7	Royalty collection of other Misc. items		-			21.83						21.83

## Chapter-9

### FOREST FIRE

Calendar Year	Number of fire incidents in forest area			Forest area affected by fire (ha)			Estimated Loss				Casualties		
	Within Protected Area(PA)	Outside Protected Area(PA)	Total	Within Protected Area(PA)	Outside Protected Area(PA)	Total	Loss of Timber		Damage to Plantation Areas (in lakhs)	Damage in PAS Area	Human Life	Cattle	Wildlife
							Volume in cu.mt.	Value in lakhs					
2002	4	28	32	16	154	170	2.00	1.00	15.00	1.00	Nil	Nil	Nil
2003	5	18	23	12	110	122	2.00	1.00	9.77	1.00	„	„	„
2004	5	16	21	18	100	118	2.00	1.00	12.16	1.00	„	„	„
2005	6	36	42	30	332	362	3.00	1.50	38.14	1.80	„	„	2
2006	8	50	58	100	308	408	3.00	1.50	37.46	10.00	„	„	2
2007	2	29	31	25	75	100	1.00	0.50	9.50	2.00	„	„	Nil
2008	3	39	42	8	320	328	2.00	1.00	31.00	2.00	„	„	„
2009	11	120	131	300	1003	1303	20.00	3.50			„	4	4

## Chapter -10

### **FOREST OFFENCE:**

#### **ILLCIT FELLING DURING 2009-10:**

District	No.of cases of illicit felling	No.of Trees illicitly felled	Loss of timber (volume (in cu.mt)	Value of losses (.in akhs)	No.of offenders arrested	No.of Vehicles seized	No.of vehicles confiscated
South	5	7	8.05 cu.mt.	0.77	11	NIL	NIL
North	3	6	-	0.03	NIL	NIL	NIL
West	2	2	4 piles	-	2	1	-
East	4	7	27028 cu.mt.	2.07	NIL	NIL	NIL
Total-	14	22	4 piles+ 8.05 cu.mt + 27028 cu.mt.	2.87	13	1	-

#### **ILLCIT FELLING DURING LAST 8 YEARS**

Year	No. of cases of illicit felling	No. of trees illicitly felled	Loss of Timber (Volume in cu. mt.)	Value of losses (Rs.in lakhs)	No. of Offenders arrested	No. of Vehicles seized	No. of Vehicles confiscated
2002-03	41	41	51.00	5.00	2	1	Nil
2003-04	30	35	35.14	3.33	9	1	Nil
2004-05	40	45	47.29	5.35	6	1	Nil
2005-06	25	65	45.36	3.78	8	2	Nil
2006-07	15	92	83.40	10.10	24	4	Nil
2007-08	15	29	30.00	5.00	8	2	Nil
2008-09	54	72	52	9.00	4	4	Nil
2009-10	14	22	27036.05	2.87	13	1	Nil

#### **STATUS OF FOREST LAND ENCROACHMENT AS ON 31/3/2010.**

District	Total Area Encroached (in ha)	Encroachment evicted	Net Area under Encroachment	No.of families affected.				Total
				SC	ST	OBC	Others	
South	396.672	NIL	396.672	-	-	-	-	
North	2315.684209	10 ha	2305.684209	-	-	-	-	
West	2.04	NIL	2.04	-	-	-	-	
East	586.56	58.089	528.471	331	43	99	59	232
Total-	3300.96	68.09	3232.87	31	43	99	59	232

## Chapter -11

### Afforestation under 20 Point programme:

The 20 point programme (TPP) was launched by the Government of India in the year 1975 and was first revised in 1982, 1986 and recently in 2006-07 with a view to setting up effective monitoring system and thus strengthening the planning & implementation machinery. The restructured TPP -2006 consists of 20 Point & 66 monitorable items where under point No.15 pertains to Environment Protection & Afforestation and covers all the plantation works carried out under different programmes & schemes. Though the primary responsibility of monitoring the individual programme/scheme lies with the Central Ministry / State Government, the Ministry of Statistics & Programme Implementation, will monitor the programme in totality.

15 a – Area covered under plantation (Government Land)					15 b- Seedling planted (Private land). (in lakhs)		
Sl No	Year	Target	Achievement	% Ach.	Target	Achievement	% Ach.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
01	1971-80		7463.00			6.59	
02	1980-85		3332.65			3.38	
03	1985-86		1666.25			2.79	
04	1986-87		1470.00			2.45	
05	1987-88		1511.25			2.52	
06	1988-89		1616.25			2.69	
07	1989-90		1852.50			3.09	
08	1990-91		3416.25			5.69	
09	1991-92		4622.47			7.90	
10	1992-93		5484.00			9.14	
11	1993-94		5786.70			9.64	
12	1994-95		6900.00			11.50	
13	1995-96		7189.50			11.99	
14	1996-97		7500.00			12.50	
15	1997-98		6356.56			13.05	
16	1998-90		7537.00			2.50	
17	1999-00		6923.00			20.91	
18	2000-01		8048.00			15.15	
19	2001-02	12000	6217.00	51.81	22	12.42	56.45
20	2002-03	7500	3696.00	49.28	22	14.73	66.95
21	2003-04	7500	6125.19	81.67	22	8.66	39.36
22	2004-05	8000	6191.00	77.39	22	10.32	46.91
23	2005-06	12000	8012.87	66.77	15	6.13	40.86
24	2006-07	15000	3550.26	23.66	15	9.75	65.00
25	2007-08*	12000	3456.73	28.80	*78	30.84	39.54
26	2008-09	12000	3862.37	32.2	*78	23.04	29.55
27	2009-10	25000	8006.85	32.02	*162.50	48.61	29.54

\* 2007-08 onwards, only forest land has been accounted for and private land has been excluded.

**Chapter-12**

**WORK CARRIED OUT UNDER FOREST DEVELOPMENT AGENCIES,  
ERRITORIAL CIRCLE AS ON 31<sup>st</sup>.March,2010.**

Sl. No	Name of FDA	Project Period	Total outlay (Rs.in lakh)	Total physical Target (in hac.)	Fund released till date (Rs. in Lakh)	Fund utilized (Rs in lakhs)	Physical Achievement (Area in ha.)
1	North Sikkim FDA	2009-10	120.44	280	90.33	90.21	280
2	East Sikkim FDA	2009-10	132.68	300	90.00	78.21	300
3	South Sikkim FDA	2009-10	157.02	400	125.22	124.96	400
4	West Sikkim FDA	2009-10	96.63	350	77.00	57.14	250
	<b>Total</b>		<b>506.77</b>	<b>1330</b>	<b>382.55</b>	<b>350.52</b>	<b>1330</b>

**NO. OF HOUSEHOLDS COVERED JFMCs  
AS ON 31.03.2010**

SL No	Name of FDA	No of JFM CS	Name of Household in Project Village			Name of Household Directly Benefiting								
						From EPA Activities			From Silvicultural Works			From Wages		
			SC	ST	Total	SC	ST	Total	SC	ST	Total	SC	ST	Total
1	North Sikkim FDA	32	31	4364	4430	65	201	2075	25	670	695	60	4370	4430
2	East Sikkim FDA	51	651	5338	15690	649	3590	11120	186	1160	2083	529	698	2540
3	South Sikkim FDA	36	1754	4808	16899	365	482	1774	573	996	2876	660	802	5640
4	West Sikkim FDA	40	584	2310	9589	308	1188	4806	358	1321	5453	403	1597	3567
	<b>TOTAL</b>	<b>159</b>	<b>3020</b>	<b>16820</b>	<b>46608</b>	<b>1387</b>	<b>7270</b>	<b>19775</b>	<b>1142</b>	<b>4147</b>	<b>11107</b>	<b>1652</b>	<b>7467</b>	<b>16177</b>

**National Afforestation Programme under Wildlife Sector:**

**1. Activities carried Wildlife FDA as on 31.3.2010**

SN	Name of FDA	Project Period	Total Outlay (Rs.in lakhs)	Total PHY. Target (in Ha)	Fund released till date	Fund Utilized	PHY. achievement (in Ha)
1.	North-East Wildlife FDA	2009-10	176.97	300	140.61	140.33	300
2.	South- West Wildlife FDA	2009-10	-	-	-	-	-
3.	KNP	2009-10	98.35	900	98.35	98.35	900
	<b>TOTAL</b>		<b>275.31</b>	<b>1200</b>	<b>238.96</b>	<b>238.68</b>	<b>1200</b>

**2. No. of household covered under EDCs of Wild Life FDAs as on 31.03.2010**

SN	Name of FDA	Name of EDCs	No of Household in Project Village			No of Household Directly Benefited								
						From EPA Activities			From Silvicultural Works			From Wages		
			SC	ST	Total	SC	ST	Total	SC	ST	Total	SC	ST	Total
1.	North-East Wildlife FDA	19	405	2371	6382	80	180	320	280	1300	1580	150	850	1400
2.	South-West Wildlife FDA	18	337	1771	2108	25	410	435	25	1520	1545	15	44	59
	<b>Total-</b>	<b>57</b>	<b>742</b>	<b>4142</b>	<b>7590</b>	<b>105</b>	<b>590</b>	<b>755</b>	<b>305</b>	<b>2820</b>	<b>3125</b>	<b>155</b>	<b>894</b>	<b>1459</b>

## **Chapter-13**

### **NATIONAL BAMBOO MISSION:**

The Department of Agriculture & Cooperation, Government of India launched the “National Bamboo Mission” recognizing the role of bamboo in improving the socio-economic condition of the rural poor and also to contribute for Bamboo development and has about 29 species belong to 9 genera.

**Objective:** The main objective of the mission is to promote growth through an area based, regionally differentiated strategy so as to increase the bamboo cover in potential area with improved high yielding varieties. Traditional as well as scientific technologies will also be incorporated. The mission will reduce pressure on forests and help in employment generation. The mission intends to capture the international market on bamboo and its allied product.

**Approach and Strategy:** Emphasis will be on promotion of research and increasing production. The mission will ensure that there are substantial returns to the growers through appropriate marketing measures. Capacity building and human resource development will be given priority. Care will be taken to eliminate middle men.

Under the National Bamboo Mission Programme, the State of Sikkim started its plantation in both the forests and private lands. The Department of Forests, Environment & Wildlife Management is executing the plantation of bamboo and raising bamboo seedlings in the nurseries through Joint Forest Management Committee form 2007. The plantation in private land is being executed by the Horticulture and Cash Crop Development Department, Government of Sikkim.



Plantation carried out under Bamboo Mission during the 4 years:

District	2006-2007		2007-2008		2008-2009		2009-2010		Total Target	Total Achievement
	Target(ha)	Achievement(ha)	Target(ha)	Achievement(ha)	Target(ha)	Achievement(ha)	Target(ha)	Achievement(ha)		
North	150	184	344.5	184	614.5	494.5	120	120	1229	982.5
East	150	116	300	116	285	285	-	-	739	517
West	300	255.5	300	255.5	415	355	60	60	1075	926
South	200	200	300	200	330	278.5	52.5	52.5	882.5	731
Total -	800	755.5	1244.5	755.5	1644.5	1413	232.5	23.25	3921.5	3156.5

## Chapter -14

### ❖ STATE GREEN MISSION

#### ❖ *A Unique Innovative Environment Programme Launched in Sikkim*



❖

#### ❖ *Launching of Sikkim Green Mission on 27<sup>th</sup> February 2006*

- ❖ 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.
- ❖ Hence the State Government has taken initiative to generate Avenue plantation in massive scale by using all the manpower in various departments in the Government, and other nature lovers from the Government and Non Governmental Organizations including different Eco clubs and Self Help groups. Accordingly Government had takeout a notification vide no 15/Home/06 dated 24/2/2006 in this regard. The Hon’ble Chief Minister Shri. Pawan Chamling formally launched this Mission on 27<sup>th</sup> February 2006 in the presence of all Ministers, officers and the public of Sikkim in the programme organized by the Forest Environment and Wild Life Management department at Chintan Bhawan, Gangtok.

### **❖ Aims and Objectives**

The major objectives of the programme are to create green belt and avenues for meeting aesthetic recreational needs of the people and beautify the areas for tourist attraction. This programme is expected to provide fringe benefits like reduction in the surface run-off discharge and checking erosion in the downhill side and will also create a store house of genetic diversity by planting all the indigenous trees, shrubs, herbs, climbers, creepers, conifers and green foliage including fruits and medicinal plants.

The greenery generated out of this programme will also reduce noise pollution to the neighboring household population; attract the avifauna, butterflies, squirrels etc and their shelter. Sikkim becoming a Garden State, the mission will also work with objective to promote tourism as a sustainable and eco friendly activity in the state of Sikkim. The programme is also expected to generate awareness on environment & forests and bringing in sense of participation and ownership among people in the whole process.

### **Implementing Mechanism**

A State level committee under the chairmanship of Hon'ble 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.

### **Implementation period**

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 all the 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	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	East	2.66	2.74	1.55	1.53	8.48
2	South	1.19	2.15	0.82	0.23	4.39
3	West	1.58	3.43	1.78	1.12	7.91
4	North	0.33	3.46	2.47	0.75	7.01
<b>Total-</b>		<b>5.76</b>	<b>11.78</b>	<b>6.62</b>	<b>3.63</b>	<b>27.79</b>

## Chapter -15

### RIVER VALLEY PROJECT (RVP)

The River Valley Project started in the year 1978, has made a tremendous achievement in treating landslides areas by Drainage Line Treatment, Plantation works in Forest Land, Agriculture Land and Waste Land. The functioning of RVP is under central sponsored scheme approved by the State Government and send to the Central Government to the Ministry of Agriculture, NRM Division, New Delhi for its final approval and sanction. It is a 100% central sponsored scheme. In Sikkim various watersheds are taken up for its treatments, all the watershed in Sikkim falls under Teesta Catchments, as per Soil Survey of India.

The continuous two year study of siltation of soil and water current with the help of hydrologic sediment monitoring station which is constructed at Khani Khola near Magitar in East Sikkim helps the Division to prepare the new project proposal of the area according to the priority basis. Presently RVP division is implementing four numbers of watersheds that is Tb3g-Reshi Khola, that covers the area of Boom Reshi, Tafel, Samdong, Sama Gawn, Detahng, Sribadam, Parang Gawn, etc. Tb4c- Bhutay Khola watershed covers the area of Bermiok, Barthang, Martam, Rungdu, Pechrek and Hee-patal. Tb4f- Changey Khola watershed covers the area of Gayzing, Langang, Khorung, Linchom, Sardung, Sapung, Bangten and Omchung. These three watersheds are being implemented in west Sikkim. Ta3a- Khani khola watershed in east Sikkim covers the area of East Pendam, West Pendam, Central Pendam, etc.

The implementation of scheme is made by the Forest Department along with the public participation, Block panchayats, watershed committee and the villagers. The farmer awareness camps are frequently held in various watershed areas where the distributors of forestry seedlings and horticulture seedlings are done.

The areas are divided into Agriculture land, Wasteland and Forestland according to the need of the land the seasonal plantation is made. During winter season the sausage walls, drainage line treatment, water harvesting tanks, waiting sheds at Rangsang *Dovan* cremation centre and also at roadside are constructed with the help of watershed committees. Time to time monitoring team monitors the work and release the fund according to the progress made. The fund is sponsored by National Resource Management division, Ministry of Agriculture and Cooperation, Government of India. The fund is released to the State Agriculture Department, which is the Nodal Department of Macro management Mode. Henceforth, the fund is rooted to RVP Division. The ministry of Agriculture, NRM Division sanctions the project for the period of five years and the fund is distributed among various sub-heads, like pay n allowance, entry point activities, SMS, project activities, survey and demarcation, TOT(Transfer of Technology), Contingencies, etc.

The implementation project benefits the public through various ways, mainly creating job opportunities on daily wage basis to local villagers falling under the watershed areas during plantation, construction of sausage walls, dry walls, drainage line treatment. The project also helps the villagers to prevent landslide, soil erosion in private as well as in forest lands. The high yielding variety of horticulture seedlings are distributed to the villagers for healthy fruiting trees, forestry species for timber and fodder seedlings for dairy farming. The monthly progress report in the state as well as Central on the ready formats through internet is intimidated, So that the Department can analyze the monthly progress made by the Division.

RVP Division is maintaining three hectares of nursery at Gai Dhara and Salingay in East Sikkim. The quantity of seedlings is enough for afforestation and road side avenue plantation, within the implemented watershed area. The RVP Division takes up the area under priority which is in a basic need to be treated. The division will soon be implementing many watersheds in order to uplift the poor and needy people falling under land lock areas, with poor geographical conditions. The Division has now been successfully implementing four numbers of watersheds, one SMS at Khani Khola and more than fifteen Officers and Staff are working at different districts of Sikkim.

**Chapter -16**

**FOREST CONSERVATION ACT (FCA) CELL**

FCA Cell, a separate unit under the Forest Environment & Wildlife Management Department, is being headed by the Nodal Officer with his supportive officials/staff dealing with the forest land diversion cases as per the provision of the Forest (Conservation) Act. Since its inception, the Act has facilitated many developmental activities like construction of roads, power project, irrigation projects, Border Outpost, schools, hospitals, rural electrification, telecommunication, drinking water facilities, mining etc on forest lands and checked the indiscriminate diversion of pristine forest areas. The updated records of the forest land diverted for various developmental purposes with their relative achievement in terms of the compensatory afforestation are as under:-

Sl. No	Item	DISTRICT -WISE				Total
		North	East	South	West	
1	Number of cases approved for diversion since 1980	56	102	79	37	274
2	Total forest land diverted (in ha) since 1980	638.47	930.68	386.96	107.356	2063.47
3	Compensatory Afforestation Stipulated till 31.3.2010 (in ha)					
	a) In forest land	1738.33	1447.25	591.31	375.51	4152.40
	b) In non-forest land	64.57	0.00	2.5	15.78	82.85
	<b>TOTAL (a+b)</b>	<b>1802.90</b>	<b>1447.25</b>	<b>593.81</b>	<b>391.29</b>	<b>4235.25</b>
4	Compensatory Afforestation Completed till 31.3.2010 (in ha)					
	a) In forest land	800.405	583.07	470.76	280.75	2135.00
	b) In non-forest land	2.262	0.00	2.50	13.01	17.776
	<b>TOTAL (a+b)</b>	<b>802.66</b>	<b>583.07</b>	<b>473.26</b>	<b>293.76</b>	<b>2152.76</b>

## Chapter-17

### STATE - COMPENSATORY AFFORESTATION FUND MANAGEMENT & PLANNING AUTHORITY (CAMPA)

State Compensatory Afforestation Fund Management and Planning Authority to be known as State-CAMPA, constituted by the State Government as per the directives of the Central Government by Notification No.107/Home/2009 dated 12-8-2009, has become operational mainly for the purpose management of money towards the CAs, NPV and any other money recoverable in pursuance of the Honb'ble Supreme Court order in this regards and in compliance of the conditions stipulated by the Central while according approval under FC Act 1980 for non forestry uses. The State-CAMPA consists of three tier functional bodies. The upper one is the Governing Body headed by the HCM as chairperson and PCCf/Secy as Chairman, The second one is the Executive Committee headed by the Chief Secretary as Chairperson with the Addl PCCF as Member Secretary and the Third one is the Executive Committee headed by the PCCF as Chairperson and CCF-cum Nodal Officer (FCA) as Member Secretary.

#### **Utilisation of STATE-CAMPA-Fund As per approved Annual Plan of Operation (APO) During the Year 2009-10**

*Amount in Lakhs*

Sl.No	Name of Schemes	Amount	Total
1	2	3	4
1	<b>Compensatory Afforestation Schemes- Advance works</b>	134.59	<b>134.59</b>
2	<b>Net Present Value (NPV) Schemes</b>	166.32	<b>166.32</b>
3	<b>Catchments Area Treatment Plan</b>		
	(a) CAT Plan for Chujachen HEP	16.26	<b>16.26</b>
	(b) CAT Plan for Jorethang loop HEP	60.24	<b>60.24</b>
	(c) CAT Plan for Teesta Low Dam HEP	41.65	<b>41.65</b>
	(d) CAT Plan for Ramam HEP	18.70	<b>18.70</b>
4	<b>Wildlife Conservation &amp; Protection Plan in PAs</b>	5.35	<b>5.35</b>
	<b>TOTAL</b>	<b>443.11</b>	<b>443.11</b>

*(Rupees Four Crore forty three lakhs and eleven Thousand) only*

## Chapter-18.

### WORKING PLAN CIRCLE:

Working Plan Circle office is stationed at Head Office, Gangtok which controls and looks after the overall activities for the preparation of working plans/working schemes/management plans and Survey and Demarcation. Presently the Working Plan circle is having following officers and staff to carry out the working plan circle's activities.

### **STAFF POSITION:**

#### **WORKING PLAN DIVISION AND SURVEY & DEMARCATION DIVISION STAFF POSITION**

	<b>WORKING PLAN DIVISION</b>		<b>SURVEY &amp; DEMARCATION DIVISION</b>	
Officers	CF (W.P)	1	DFO	1
	D.F.O. (W.P)	1		
	A.C.F. (W.P)	1	ACF	1
Field Staff	R.O.	1		
	B.O.	2	BO	2
	B.O. Adhoc	2		
	H.F.G.	2		
	F.G.	1		
Technical Staff	Plg. Asstt.	1	Surveyor	2
	STA	2	Asstt. Surveyor	1
	Cartographer	1		
	IT Asstt.	1	Draughtman	1
Office Staff	SR. Acctt.	1		
	HA	1		
	Jr. Acctt.	1	Jr.Acctt.	1
	UDC	1		
	LDC	3	LDC	1
	Computer Operator	1	Typist	1
	Peon	2	Peon	1
	Chowkidar	1		



## **Functions and Achievement:**

The mandate of working plan circle is to prepare the working plans for all the four districts of Sikkim incorporating all the aspects of the scientific management of natural as well as plantation forest of the State. This Circle is in the advanced stage of writing the working plan for the state for next ten years. The Remote Sensing wing of the Circle GIS Lab fully equipped with modern and latest scientific machineries and instruments for generating very useful outputs for management of forest. The Software used in Lab are ArcGIS master lab kit, ERDAS Imagine (8.4 & 9.3 version) and hardware like A0 Plotter and A0 Scanner. The working plan of the South Territorial Division has already been completed. Activities and achievements of the circle during 2009-10 are enumerated below.

- Procurement of new GIS software Arcview 9.3
- Upgradation of Remote Sensing and GIS lab.
- Upgradation of offices of the technical staff by making new sitting arrangement by way of cubicles.
- Completion of the most of the field work related to vegetation carbon pool assessment.
- Completion of the working plans for the East and West Sikkim. The 2<sup>nd</sup> Preliminary Working Plan Reports for these divisions were discussed in the committee constituted for the purpose in the presence of CCF (Central). They have been sent to Government of India for approval.
- For revision of the Working Plan of South Sikkim 50 numbers of sample plots were laid in various forests of South Sikkim for collection of data on trees, herbs and shrubs. The forest areas covered during sampling were forest areas of Sadam R.F. Tendong R.F. Namchi R.F, Shyam Pani R.F., Chalamthang R.F, Deorali R.F. and Ramaram R.F. under Namchi Range, Karzi R.F. Sada phamthang R.F. Sokpay R.F. and Lingey Payoung R.F. under Rabong Range, Namthang R.F. Rolu R.F. under Namthang and Melli Range.

- Two week refresher course was conducted for forest frontline staff.
- Survey of Reserve Forest Boundaries and compartment Boundaries and Demarcation with Boundary Pillars was done in all the districts using cadastral maps and GPS. About 60 km of survey has been done in Reserve forests in low altitude and 600 boundary pillars were erected there. 5 km of survey was done in Reserve forests in high altitude and 50 boundary pillars were erected there. 60 km of forest compartment boundary survey in low altitude and that 10 km in high altitude was done. 300 compartment boundary pillars in low altitude and 50 compartment boundary pillars in high altitude were erected.

## Chapter – 19

### EXTRACTION AND SALE OF FOREST PRODUCE

The Utilization Circle is the commercial wing of the department. Extraction of Wind-fallen trees, trees from project sites where forest land is diverted to the user agencies, extraction of poles from thinning of old plantations and conversion into timber, firewood and charcoal and sale of these forest produce is done by this Circle.

The Utilization Circle consists of one Conservator of Forest, one Divisional Forest Officer, One Assistant Conservator of Forest and a Block Officer and has to cover the whole of Sikkim.

The Division has one saw mill situated at Chuba in Government land, where the Division converts timber, firewood out of those trees/poles from above mentioned areas.

The division is also doing the Import of timber, charcoal, quartz stones from out side the State through Sale Agents, who are operating timber business after obtaining license and paying import fee as per schedule of Government rate. By doing so the Forest Environment & Wildlife Management Department is saving the forest of the State and earning revenue in a legalized manner.

The financial achievements of this division are given below for the year of 2009-10.

#### **Detail of extraction and sale of forest produce and import fee during 2009-10.**

<b>Year</b>	<b>Forest Produce</b>	<b>Quantity extracted &amp; sold (in cft. / piles /No)</b>	<b>Revenue realized (Rs.in lakhs)</b>
<b>2009-2010</b>	Timber	1627.98 cft.	4.97
	Firewood	150.5 pile	0.82
	Disposed of tree	183 nos.	3.80
	Disposed of ballies	-	-
	Sawing Charge	6579.5 cft.	1.33
	Saw dust	50 bags	0.05
	<b>TOTAL</b>		<b>10.93</b>
	<b><u>IMPORT FEE</u></b>		
	Timber	104812.54 cft.	19.39
	Quartz Stone	1000 mt	0.50
	Charcoal	2085 bags	0.42
	Bamboo	4260 nos.	0.20
	<b>TOTAL</b>		<b>20.50</b>
	<b>GRAND TOTAL</b>		<b>31.42</b>

**DETAILS OF EXTRACTION AND SALE OF FOREST PRODUCE**  
**FOR THE LAST TWELVE YEARS.**

Year	Timber		Firewood		Charcoal		Total
	Quantity extracted and sold (Cubic feet)	Revenue realized (Rupees)	Quantity extracted and sold (Piles)	Revenue realized (Rupees)	Quantity extracted and sold (Bags)	Revenue realized (Rupees)	Revenue realized (Rupees)
1998-1999	1004.75	1.41	58	0.22	180	0.18	1.81
1999-2000	1535.52 1872 Nos (Ballies)	2.23	157	0.84	620	0.45	3.52
2000-2001	1741.75 1393 Nos (Ballies)	2.93	168	0.83	245	0.18	3.94
2001-2002	11869.54 1225 Nos (Ballies)	22.31	95	0.18	77	0.37	22.86
2002-2003	13421.31 cft.	20.13	379.72	1.90	213	0.28	22.31
2003-2004	4863.50cft.	10.28	151.82	0.76	176	0.26	11.30
2004-2005	3852.62 cft.	8.23	169.15	0.85	13	0.21	9.29
2005-2006	3367.52cft	8.14	111.80	0.77	13	0.19	9.1
2006-2007	1876.43cft	2.81	224	1.21	-	-	4.08
2007-2008	1007.53 cft	1.91	90.80	0.56	-	-	2.47
<b>2008-2009</b>	<b>2659.95 cft</b> <b>354 no of trees</b> <b>1493 no of ballies</b>	<b>11.01</b>	<b>149.65</b>	<b>0.81</b>	<b>-</b>	<b>-</b>	<b>11.82</b>
<b>2009-2010</b>	<b>1627.98cft.</b> <b>183 nos.trees</b>	<b>8.77</b>	<b>150.5</b>	<b>0.82</b>	<b>-</b>	<b>-</b>	<b>9.59</b>

## Chapter- 20

### NTFP/SMPB DIVISION :

#### **1. The Conservation & Propagation of selected Rare, Endangered and Threatened (RET) species of medicinal plants in Forest areas.**

The National Medicinal Plants Board (NMPB) , Department of AYUSH, Ministry of Health & Family Welfare, Government of India has approved the project proposal for Conservation & Propagation of selected Rare, Endangered & Threatened species of medicinal plants in Forest areas with physical target of 1200 hectares and financial outlay of Rs 507.00 Lakhs, submitted by the State Medicinal Plants Board, during the year 2008-09. The project was inaugurated on 16<sup>th</sup> June, 2009 by the Honourable Minister for Forest, Env.& Wildlife Management Department , Tourism, Mines& Geology Department , Science & Technology Department, Government of Sikkim, in the presence of the Chief Executive Officer, NMPB and PCCF-cum-Secretary Forest for implementation of the project from 2009-10. Accordingly, the project was implemented in the four Districts by forming the medicinal Plants Grower's Associations by the concerned Range Officers. The details of Physical and financial; target for conservation and propagation of RET species during the year 2009-2010 are as under:-

<b>North District :</b>			
<b>Sl. No</b>	<b>location</b>	<b>RET species planted</b>	<b>Physical target Financial target</b>
i.	Alpine and Sub-alpine Forest	Aconitum spp., Jatamansi, Phodophyllum hexandrum Kutki, Orchis latifolia, Rheum emodi Juniper recurva	155 Ha
ii.	Temperate Forests	Swertia chiraita, Rubia cordifolia Acorus calamus	45 Ha
	<b>Total :</b>		<b>200 Ha            74.24 lakhs</b>
<b>2. East District:</b>			
<b>Sl. No</b>	<b>location</b>	<b>RET species planted</b>	<b>Physical target Financial Target</b>
i.	Alpine and Sub-alpine Forests	Aconitum spp., Jatamansi, Phodophyllum hexandrum Kutki, Orchis latifolia, Rheum emodi Hippophea salicifolia	96 Ha
ii.	Temperate Forests	Swertia chiraita, Rubia cordifolia Acorus calamus	58 Ha
iii.	Sub-Tropical Forests	Phyllanthus emblica , Terminalia chebula, Terminalia ballerica, Oroxylum indicum	75 Ha
	<b>Total:</b>		<b>229Ha            64.21 lakhs</b>
<b>3. South District:</b>			
<b>Sl. No</b>	<b>location</b>	<b>RET species planted</b>	<b>Physical target Financial target</b>
i.	Temperate Forests	Swertia chiraita	20 Ha
ii.	Sub-Tropical Forests	Phyllanthus emblica , Terminalia chebula, Terminalia ballerica, Oroxylum indicum	75 Ha
	<b>Total:</b>		<b>95 Ha            19.83 lakhs</b>

**4. West District:**

Sl. No	location	RET species planted	Physical target	Financial target
i.	Temperate Forests	Swertia chiraita, Rubia cordifolia	30 Ha	
ii.	Sub-Tropical Forests	Phyllanthus emblica , Terminalia chebula, Terminalia bellerica, Oroxylum indicum	75 Ha	
Total:			105 Ha	22.50 Lakhs
2.	Creation of nurseries for raising Tree Species having medicinal value under promotion scheme funded by NMPB in East, North, south & West Districts from 2007-8 to 2010-11: -			

**A. East District**

1.	<b>Project No. &amp; Title</b>	-	Pr.GO/Sk-01/2007-08-NMPB Creation of nursery for raising of medicinal plants of tree species having high medicinal value in East District from 2007-2008 to 2010-2011.	
2.	<b>Location</b>	<b>physical</b>	<b>financial target :</b>	
	i. Rorathang Nursery	1.4 ha.	15.00 lakhs	
	ii. Singtam Nursery	<u>0.6 ha</u>		
		<b>2.0 ha</b>		
3	<b>Achievement:</b>			
	A. Financial target achieved upto 31st March 2010	-	Rs. 15.00 Lakhs	
	B. Physical target achieved	-	2.00 ha	
	<b>C. Activities</b> - Numbers of tree species seedlings raised from 2007-2008-2010-2011.			

**I. Rorathang Nursery**

1.	Aegle marmelos (Bael)	-	40,000 nos.
2.	Oroxylum indicum (Totola)	-	1,24,500 nos.
3.	Emblica officianalis (Amla)	-	80,900 nos.
4.	Evodia fraxinifolia (Khanakpa)	-	1,43,000 nos
5.	Terminalia belerica Barra	-	62,500 nos.
6.	Melia composite(Lapsi)	-	49,200 nos.
7.	Bhakimilo	-	32,300 nos.
8.	Terminalia chebula	-	47,000 nos.
9.	Timbur	-	10,600 nos.
10.	Bakaina	-	17,200 nos.
11.	Kusum	-	6,400 nos.
12.	Bahunia	-	<u>29,500 nos.</u>
	<b>Total</b>	-	<b><u>5,04,200 nos.</u></b>

**II Singtam Nursery**

1.	Aegle marmelos (Bael)	-	30,000 nos.
2.	Oroxylum indicum (Totola)	-	30,400 nos.
3.	Emblica officianalis (Amla)	-	31,300 nos.
4.	Terminalia belerica (Barra)	-	18,200 nos.
5.	Terminalia chebula	-	16,800 nos.
6.	Straycullata pinnata(Lapsi)	-	22,800 nos.
7.	Bhakimlo	-	15,300 nos.
8.	Evodia fraxinifolia (Khanakpa)	-	7,700 nos.
9.	Timbur	-	7,300 nos.
10.	Bakaina	-	18,800 nos.
11.	Koirala	-	<u>16,800 nos.</u>
	<b>Total</b>	-	<b><u>2,16,400 nos.</u></b>

**B. West District**

1. **Project No. & Title** - Pr.GO/Sk-02/2007-08-NMPB Creation of nursery for raising of medicinal plants tree species having high medicinal value in West District from 2007-2008 to 2010-2011.
2. **Location**
- |                     |                 |                          |
|---------------------|-----------------|--------------------------|
|                     | <b>physical</b> | <b>Financial target:</b> |
| i. Sipsu Nursery    | 1.4 ha.         | 19.34 lakhs              |
| ii. Raniban Nursery | <u>0.6 ha.</u>  |                          |
|                     | <b>2.0 ha</b>   |                          |
3. **Achievement:**
- A Financial target achieved upto 31st August 2010 - Rs. 17.64 Lakhs
- B . Physical target achieved - 2.00 ha.
- C **Activities** Numbers of tree species seedlings raised from 2007-2008-2010-2011

**I. Sipsu Nursery**

1. Oroxylum indicum (Totala)	-	1,80,000 nos.
2. Emblica officianalis (Amla)	-	1,05,000 nos.
3. Terminalia chebula (Harra)	-	29,000 nos.
4. Sapindus mukrossi (Ritha)	-	45,000 nos.
5. Lall Chandan	-	27,000 nos.
6. Azadirachta spp. Bagaina	-	15,000 nos.
7. Terminalia belerica (Barra)	-	48,000 nos.
8. Raj Briksha	-	14,000 nos.
9. Evodia fraxinifolia(Khanakpa)	-	11,000 nos.
10. Timbur	-	3,000 nos.
11. Azadirachta indica (Neem)	-	15,000 nos.
12. Melia composite(Lapsi)	-	<u>15,000 nos.</u>
<b>Total</b>	-	<b><u>5,07,000 nos.</u></b>

**II Raniban Nursery**

1. Oroxylum indicum (Totala)	-	70,000 nos.
2. Emblica officianalis (Amla)	-	35,000 nos.
3. Sapindus mukrossi Ritha	-	25,000 nos.
4. Lall Chandan	-	21,000 nos.
5. Azadirachta indica (Neem)	-	20,000 nos.
6. Terminalia chebula (Harra)	-	10,200 nos.
7. Evodia fraxinifolia (Khanakpa)	-	40,000 nos.
8. Melia composite(Lapsi)	-	10,000 nos.
9. Juglansrajia Walnut	-	7,500 nos.
10. Taxus baccata Dangresalla	-	<u>1,000 nos.</u>
<b>Total</b>	-	<b><u>2,39,700 nos.</u></b>

**C. North District**

1. **Project No. & Title** - Pr.GO/Sk-03/2007-08-NMPB Creation of nursery for raising of medicinal plants of tree species having high medicinal value in North District from 2007-2008 to 2010-2011.
2. **Location a**
- |              |                        |                         |
|--------------|------------------------|-------------------------|
|              | <b>Physical target</b> | <b>Financial Target</b> |
| Tingda Block | 2 Ha                   | 19.50 lakhs             |
3. **Achievement:**
- A . Financial target achieved upto 31st March 2010 - Rs.17.29 Lakhs
- B. Physical target achieved - 2.00 ha.

C. **Activities:** Numbers of tree species seedlings raised from 2007-2008-2010-2011

I.	Taxus baccata (Dhangray salla)	-	4,000 nos.
II.	Oroxylum indicum (Totola)	-	58,000 nos
III.	Emblica officinalis (Amla)	-	63,000 nos.
IV.	Hippophoe salicifolia (Achuk)	-	71,000 nos.
V.	Rhus semialata (Bhakimlo)	-	43000 nos.
VI.	Terminalia ballerica (Barra)	-	43,000 nos.
VII.	Terminalia chebula (Harra)	-	60,000 nos.
VIII.	Melia composite (Lapsi)	-	57,000 nos.
IX.	Evodia fraxinifolia(Khanakpa)	-	2,93,000. nos.
X.	Juglansrejia Walnut (Okhar)	-	18,000 nos.
XI.	Rhododendron arboretum (Gurans)	-	54,000 nos.
XII.	Michelia excelsa (Rani champ)	-	<u>16,300 nos.</u>
	<b>Total:</b>	-	<b><u>7,26,300 nos.</u></b>

D. **South District**

1.	<b>Project No. &amp; Title -</b>	Pr.GO/Sk-04/2007-08-NMPB Creation of nursery for raising of medicinal plants of tree species having high medicinal value in South District from 2007-2008 to 2010-2011.	
2.	<b>Location</b>	<b>Physical target</b>	<b>Financial Target</b>
	Tingling Ramyang Nursery	2 ha.	20.00 lakhs
3.	<b>Achievement:</b>		
	A Financial target achieved upto 31st August 2010	-	16.76Lakhs
	B . Physical target achieved	-	2.00 ha.
	C. <b>Activities -</b> Tree species Seedlings raised in Tingling Ramyang Nursery from 2008-2009 to 2010-2011.		
1.	Taxus baccata (Dhangray salla)	-	4,000nos.
2.	Oroxylum indicum (Totala)	-	58,000 nos.
3.	Emblica officianalis (Amla)	-	1,34,000 nos.
4.	Straycullata pinnata(Lapsi)	-	1,00,000 nos.
5.	Rhododendron (Lai Gurans)	-	18,000nos.
6.	Terminalia belerica (Barra)	-	86,000 nos.
7.	Juglansrajia (walnut)	-	54,000 nos.
8.	Khanakpa	-	1,93,000 nos.
9.	Terminalia chebula	-	60,000 nos.
10.	Ranichamp	-	<u>16,000 nos.</u>
	<b>Total</b>	-	<b><u>7,21,000 nos.</u></b>



## Chapter-21

### **SOCIAL FORESTRY, EAST DIVISION:**

Work done under different Schemes:

Sl.No	Name of the Schemes	Range.	Item of works	Physical Achievement (in Ha/Km)
(1)	(2)	(3)	(4)	(5)
1	12 <sup>th</sup> Finance Commission	Singtam	1.Dry Stone fencing at 17 <sup>th</sup> Mile, Bhasmey Khas 2. Creation of winter plantation of wild fruit bearing trees at L/Martam 3. Artificial regeneration of degraded forest at 13 <sup>th</sup> Mile Changey Khas	2.00 Km.  30 Ha. 20 Ha.
		Gangtok	Dry stone fencing at Khudrukey Khas	1 Km
		Pakyong	Dry stone wall fencing at Phirphirey R.F.	1 Km
2	State Green Mission	Singtam (Khamdong constituency)	1.New Avenue plantation 2.Maintenance 3. New Patch plantation	3.5 Km 40.50 Km 0.20 Ha.
		Pakyong (Namcheybong Constituency)	1.Patch plantation 2.Avenue plantation 3.Maint.of A. Plantation	0.30 Ha. 4 Km 12 Km
3	Work undertaken by the East Division under Cess Budget	Singtam	1.Fodder plantation 2.Improvement of trees land in Agriculture land	25 Ha. 8 Ha.
		Pakyong	1.Fodder plantation 2.Improvement of trees land in Agriculture land	50 Ha. 7.9 Ha.
		Gangtok	1.Fodder plantation 2.Improvement of trees land in Agriculture land	248 Ha. 23.9 Ha.

## Chapter-22

### **Tribal Sub-Plan (TSP) and Scheduled Caste Sub-Plan (SCSP)**

#### **Implementation of Scheme under Tribe Sub-Plan (TSP) and Scheduled Caste Sub-Plan (SCSP) during 2008-2009.**

On 22<sup>nd</sup> April, 2008, a state level meeting was conducted by the Principal Secretary, Social Justice Empowerment and Welfare Department, Government of Sikkim under the chairmanship of Hon'ble Chief Minister of Sikkim, with a view to discuss the issues relating to implementation of the programmes under Tribal Sub-Plan and Scheduled Caste Sub-Plan for the year 2008-2009. The basic aim of this meeting was to channelize the plan outlays and benefits from the general sector of the State Plan for the development of Scheduled Tribe & Scheduled Caste in proportion to their population both in physical and financial terms with an ultimate goal of bridging the gap in social economic development of Scheduled Caste and Scheduled Tribe. As discussed and decided in the meeting, the scheme was directed to prepare people oriented programme, scientific, productive with an area specific and training oriented programme to make the beneficiaries knowledgeable and to reach the benefits at the grass root level. The population of Scheduled Tribe and Scheduled Caste was based as per the economic survey conducted by the Director of Economic, Statistics, Monitoring & Evaluation, Government of Sikkim.

To follow up the above meeting, the Forest, Env. & Wildlife Management Department, Government of Sikkim, discussed implementation of programme under Scheduled Tribe and Scheduled Caste Sub-Plan in the chamber of PCCF-cum-Secretary Forest, on the 24<sup>th</sup> April 2008 and decided to implements on following activities through beneficiaries in the private holdings especially in ST and SC Constituencies during 2008-2009.

- i. Broom grass plantation in low altitude.
- ii. Medicinal plantation
- iii. Maintenance of nursery for raising broom grass, fodder, fuel wood & wild fruits trees.
- iv. Maintenance of old plantation.
- v. Publicity.
- vi. Engagement of unemployment youth as work supervisors for supervisions and checking of beneficiaries works.
- vii. Monitoring.

The scheme was implemented through beneficiaries for planting of Broom Grass and bamboo Plantation in the private holdings. The list of beneficiaries for the implementation of the scheme in the Block levels were selected and prepared by Block Panchayats and it was further recommended and approved by the concerned Hon'ble Area MLA.

The details of physical and financial target achieved for implementation of project are as under:

**a. TSP Scheme**

<b>Sl. No</b>	<b>Item of Work</b>	<b>Physical target achieved</b>	<b>financial target achieved</b>	<b>Nos. of beneficiaries benefited</b>
1	Broom Grass, Medicinal Plantation in private holdings and maintenance of broom and bamboo under Scheduled Tribe Sub-Plan in North District	157 ha.	34.33	1168 nos.
2	Broom Grass Plantation in private holdings under Scheduled Tribe Sub-Plan in East District	80 ha	9.01	640 nos.
3	Broom Grass Plantation in private holdings under Scheduled Tribe Sub-Plan in South District	60 ha	6.60	480 nos.
4	Broom Grass Plantation in private holdings under Scheduled Tribe Sub-Plan in West District	60 ha	6.60	480 nos.
	<b>Total:</b>	<b>357 ha</b>	<b>56.54</b>	<b>2768 nos.</b>

**b. SCSP Scheme**

<b>Sl. No</b>	<b>Item of Work</b>	<b>Physical target achieved</b>	<b>financial target achieved</b>	<b>Nos. of beneficiaries benefited</b>
1	Broom Grass, fodder Plantation in private holdings and maintenance of broom grass under Scheduled Caste Sub-Plan in East District	130 ha	14.44	1040 nos.
2	Broom Grass, fodder Plantation in private holdings and maintenance of broom grass under Scheduled Caste Sub-Plan in South District	110 ha	12.24	880 nos.
3	Broom Grass, fodder Plantation in private holdings and maintenance of broom grass under Scheduled Caste Sub-Plan in West District	110 ha	12.24	880 nos.
	<b>Total:</b>	<b>350 Ha</b>	<b>38.92</b>	<b>2800 nos.</b>

The above mentioned Schemes were implemented by the beneficiaries and was checked and monitored by the field staff and officers of Forest, Env. & Wildlife Management Department, Government of Sikkim.

## **Chapter-23**

### **PLANNING AND STATISTICAL CELL:**

The main role of this cell is to assist the Principal Chief Conservator of Forest-cum-Secretary in all matters related to policy matters, planning the activities to be undertaken by the department. This cell is the store-house of all the forestry related data. The Monthly Progress Report of various schemes being implemented by different circles of the department is being collected, compiled here and disseminated to the State and Central Government. This cell also deals with the work of management of IFS and SFS cadres, Training of IFS and SFS officers, inter as well as interdepartmental meetings. Reply to Parliament Questions, State Assembly Questions, cases of the department in the Supreme Court and co-ordination with different Ministries in the Government of India, Planning Commission and preparation of Five Year Plans etc. is being taken care of by this cell. Other important work of Right to Information Act and Administrative Reforms Commission & Knowledge Commission is also attended by this cell.

## Chapter-24

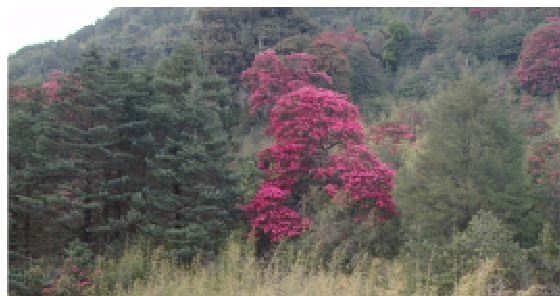
### Wildlife Conservation

Wildlife conservation has become a worldwide significance. In the field of wildlife conservation, 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 Faireanum 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 is remarkably the highest coverage amongst 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. Protection, preservation and conservation is achieved through the people's participation represented by Eco-Development Committees (EDCs) formed around the protected areas. The EDCs are the local village bodies and partners with the wildlife managers for the protection, preservation and propagation of wildlife in the National Park and Wildlife Sanctuaries. 57 EDCs around the protected areas are implementing Wildlife Forest Development Agency schemes since the year 2004. Wildlife Protected Areas commissioned and declared since the year 1995-96 are as below:

Sl. No	Name of Wildlife Protected Area	Location District	Area	Date of Initial Declaration/ Notification	Date of final Notification of the WPA after determining rights & privileges.
1	Khangchendzonga National Park	North & West	1784 Sq. Kms (expanded from 850 sq.km)	Not. No. 43(9)-Home/77 dated 26-08-1977.	Not. No. 1/KNP(WL) /F/27 dated 19-05-1997
2	Khangchendzonga Biosphere Reserve	North, South & West	2931.12 Sq. Kms (expanded due to addition of Transition Zone)	MoEF, GOI, Letter No. J-22016/76/91-BR dated 07-02-2000	Not. No. 204/KNP-KBR/WL/Forest/2009 dated 24-05-2010
3	Shingba Rhododendron Sanctuary	North	43 Sq.kms	Not. No. 46/WL/F/92/1585/FM WL dated 05-12-1992	Not. No. 45/WL/F/83 dated 25-01-1999
4	Pangolakha WLS	East	128 Sq.kms	Not. No. 26/WL/F/89 dated 07-11-2000	Not. No. 10/9/WCL/02/127 dated 05-09-2002
5	Kyongnosla Alpine sanctuary	East	31 Sq.kms	Not. No. 45/WL/F/92/1585/FM WL dated 05-12-1992	Not. No. 45/WL/F/83/05 dated 25-01-1999
6	Fambonglho WLS	East	51.76 Sq.kms	Not. No. 34/WL/82 dated 02-04-1984	-
7	Kitam Bird Sanctuary	South	6 Sq.kms	Not. No. 39/FEWL/2005 dated 03-02-2005	Not. No. 37/FEWL dated 17-06-2006
8.	Maenam WLS	South	35.34 Sq.kms	Not. No. 63/WL/F/86 dated 19-03-1987	Not. No. 45/WL/F/83/04 dated 25-01-1999
9	Sling Dong Faireanum Orchid Conservation Reserve	South	0.06 sq.kms	-	Not. No. 24/CWLW/GOS/FEWMD/308/WL C/08 dated 05-11-2008
10	Barsey WLS	West	104 Sq. kms	-	Not. No. 50/WL/F/95/269 dated 08-07-1996

**Year: 1996**

- 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 With this addition of wildlife reserve, the state's wildlife protected area network coverage increased to 14.57 % of the State's total geographical area till the end of year 1996 which is the highest amongst other States in the country. Since then, the management and development of this Sanctuary was brought under the 100% CSS grant under the scheme of " Development of National Park & Sanctuaries" from the Ministry of Environment & Forests, Government of India.

**Year: 1997**

- 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. There were few captive wild animals such as the Barking Deer, the Spotted Deer and the Himalayan Black Bear kept on display. A pair of Red Panda was also brought from Rotterdam Zoo (Holland) for initiating captive breeding program.
- Khangchendzonga National Park (High Altitude), North & West Sikkim was extended and expanded from 850 sq.kms. to 1784 sq.kms. for the purpose of protection of Khangchendzonga Mountain Eco-system, in-situ conservation of flora & fauna and other bio-diversity resources of the Khangchendzonga Mountain Range during the year 1997 vide Notification No.1/KNP(WL)/F/27 dated 19-05-1997. With this addition of major wildlife reserve, the State's Wildlife Protected Area network coverage increased to 27.33% of the State's total geographical area till the end of year 1997 which is remarkably highest amongst other States in the country.

**Year: 1999**

Maenam Wildlife Sanctuary, South Sikkim covering an area of 35.34 Sq.km. notified during the year 1987, Kyongnosla Alpine Sanctuary, East Sikkim covering an area of 31 Sq.kms notified during the year 1992 and Shingba Rhododendron Sanctuary, North Sikkim covering an area of 43 Sq.kms. also notified during the year 1992 have been finally declared and notified vide Notification No. 45/WK/F/83/04 dated 25-01-1999, Notification No. 45/WL/F/83/05 dated 25-01-1999 and Notification No. 45/WL/F/83/ dated 25-01-1999 receptively for the purpose of protection, preservation and propagation of wildlife and other bio-diversity resources of the areas. With these addition of wildlife reserves, the State's wildlife protected area network coverage increased to 28.87% of the State's total

- Geographical area till the end of year 1999, again highest coverage amongst other States in the country.
- First breeding record of Red Panda (State Animal of Sikkim) under captivity in the Himalayan Zoological Park, Bulbulay during June, 1999. A cub was born during the year and the breeding was successful since the year, 1999.



**Year: 2000**

- Khangchendzonga Biosphere Reserve, Sikkim covering an area of 2619.92 Sq.kms. with the Khangchendzonga (High Altitude) National Park, North & West Sikkim as the Core Zone was commissioned and declared for the purpose of protection of Khangchendzonga Mountain eco-system, in-situ conservation of biodiversity resources of the Khangchendzonga Mountain Range vis-à-vis development of buffer villages during February 2000 vide Ministry of Environment & Forest, Government of India Letter No. J-22016/76/91-BR dated 07-02-2000.
- Second breeding record of Red Panda (State Animal) under captivity in the Himalayan Zoological Park, Bulbulay. A cub was born to the same parents during the year 2000 and also during the year 2001.

**Year: 2002**

- Pangolakha Wildlife Sanctuary, East Sikkim covering an area of 128 Sq.kms commissioned and declared for the purpose of protection and conservation of flora & fauna and other biodiversity resources of the area during the year 2000 was finally declared and notified vide Notification No. 10/9/WCL/02/127 dated 05-09-2002. With this addition of wildlife reserve, the State's Wildlife Protected Area network coverage increased to 30.68 % of the State's total geographical year till the end of year 2002, again remarkably highest coverage amongst other States in the country.
- Fourth breeding record of Red Panda (State Animal) under captivity in the Himalayan Zoological Park, Bulbulay. A cub was born to the same parents during the year 2002.

**Year: 2004**

- State Board for wildlife was constituted in the State during July, 2004 with the Hon'ble Chief Minister as the Chairperson and the Minister in-charge of Forest, Environment & Wildlife Management Department as the Vice-Chairperson amongst other nominated members of different stakeholders as the constitution as such was required under Section 6 of the Wildlife (Protection) Amendment Act, 2002. The duties of the State Board for Wildlife (SBWL) are to advise the State Government on policy matters for the cause of effective wildlife conservation in the State. The SBWL has met thrice since the constitution of the Board and has thrashed out much wildlife critical issues.

**Year: 2006**

- Kitam Bird Sanctuary, South Sikkim covering an area of 6 Sq.kms commissioned and declared for the purpose of protection and conservation of flora & fauna especially the avifauna and other bio-diversity resources of the area during the year 2005 was finally declared and notified vide Notification No. 37/FEWL dated 17-06-2006. With this addition of wildlife reserve, the State's wildlife protected area network coverage increased to 30.76% till the end of the year 2005 which is remarkably the highest amongst other States in the country.

**Year: 2007**

- The Wildlife Sector has already prepared documents for the nomination of the Khangchendzonga Biosphere Reserve (KBR), Sikkim in the world network of UNESCO's Man and Biosphere (MAB) program and forwarded to the Ministry of Environment & Forest, Government of India for onward submission to the UNESCO for consideration.
- Fifth breeding of Red Panda (State Animal) under captivity in the Himalayan Zoological Park, Bulbulay. A cub was born to the wild rescued pair during the year 2007.

**Year: 2008.**

- Ladies Slipper Faireanum Orchid being endemic to Tinkitam forest in South Sikkim and the need for its protection, preservation and propagation of this endemic and important orchid plant being arisen, the State Government commissioned and declared Sling-Dong Faireanum Conservation Reserve covering an area of 6 Ha during the year 2008 vide Notification No. 24/CWLW/GOS/FEWMD/308/WLC/08 dated 05-11-2008. With this addition of Wildlife Reserve, the wildlife protected area network coverage increased to 30.77 % of the States' total geographical area till the end of the year 2008 which is again remarkably the highest coverage amongst other States in the country.
- Sixth breeding record of Red Panda (State Animal) under captivity in the Himalayan Zoological Park, Bulbulay. A cub was born to the same parents during the year 2008.

**Year: 2009.**

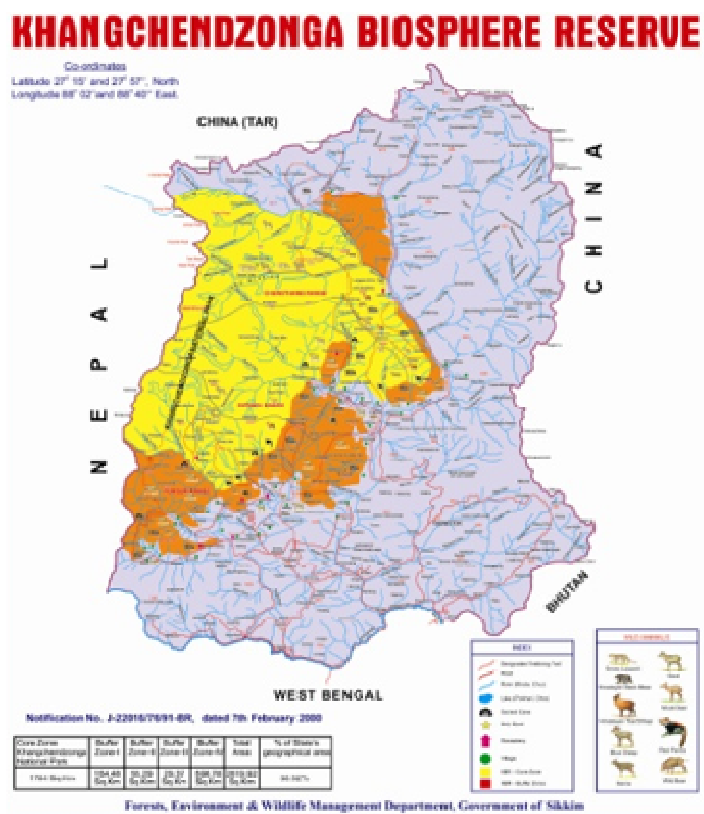
- Outstanding birth record of Red Panda (State Animal) under captivity in the Himalayan Zoological Park, Bulbulay. It was seventh breeding record of Red Panda that two cubs were born to two different females during the year 2009. Panda population had risen up to 8 numbers.
- Foundation stone laid by HCM for the Project Sidkyong Tulku Bird Park at Rabdentse, West Sikkim costing about rupees 7 crores during the launching of Forest Centenary (1909-2009) celebration.
- Management Plans of all the Wildlife Protected Areas, National Park & Sanctuaries have been completed as per the direction of the Central Government. Annual Centrally Sponsored Scheme grants from the Ministry of Environment & Forests, Government of India for the management and development of the Wildlife Protected Areas are based on the management plans. . The central grant-in-aids for Wildlife Protected Areas are continuing.



- Master (Lay-out ) Plan and a long term Management Plan of the Himalayan Zoological Park, Bulbulay for the years 2009-10 to 2018-19 has also been completed and forwarded to the Central Zoo Authority, Government of India for approval.

**Year: 2010**

- The Khangchendzonga Biosphere Reserve (KBR), Sikkim has been extended and expanded from 2619.92 to 2931.12 Sq.kms duly declaring Transition Zone comprising of 44 villages with a population of 35,757 in a total of 8,353 households vide Notification No. 204/KNP-KBR/WL/Forests/2009 dated 24-05-2010. The KBR has been again proposed for inclusion in the world network of UNESCO's Man and Biosphere (MAB) program. The MAB program will provide benefits to the local communities in the Transition Zone through livelihood sustenance schemes under the program.



- During the year 2010, there was an outstanding birth record of three cubs of Red Panda (State Animal) under captivity in the Himalayan Zoological Park, Bulbulay. The cubs were born to the two different females and the Panda population has been raised up to 11 numbers.

## ACTIVITIES UNDERTAKEN IN THE WILDLIFE SANCTURIES EAST DURING 2008-09

I. Assistance to State Management Plan for the sanctuaries have been prepared and at present the development activities are taken up as per the Annual Plan of operation (APO), submitted by the Department to Govt. of India for funding the proposed items of activities for each sanctuary. The details of the activities under taken in the three Sanctuaries are as follows;

### I. Pangolakha Wildlife Sanctuary, Sikkim

SN	Item of Work	Sanctioned			Actual		
		Quantity	Amount	Location	Quantity	Amount	Location
I	<b>Non-Recurring Activities</b>						
1	Survey of sanctuary compartments:-		4.80	PWLS(North)		4.79	PWLS (North)
	i. High altitude – 15 km @ Rs. 0.139 lakh/Km				HA 15 km		
	ii. Very high altitude – 5 km @ Rs. 0.169 lakh/km				VHA 5 KM		
	iii. Low altitude – 20 km @ Rs. 0.093 lakh/km				LA 20 KM		
	( Location as per APO)						
2	Erection of compartment boundary pillars:-	200 no	6.72	PWLS (North)		6.71	PWLS (North)
	i. High altitude – 50 no @ Rs. 0.06 lakh each				HA 50 nos		
	ii. Very high altitude – 20 no @ Rs. 0.066 lakh each				VHA 20 no		
	iii. Low altitude – 60 no @ Rs. 0.04 lakh each (Location as per APO)				LA 60 nos		
3	Habitat development for herbivores (location as per APO)	6 no	3.00	PWLS	1 no	3.00	PWLS
4	Procurement of specialized high altitude camouflage clothing, boots & water bottles for field staff	10 set	0.50	do	10 km	0.50	do
5	Construction of trekking huts at Mulkharka & Kifek	2 no	4.00	0	0	4.00	0
6	Survey & Inventorization including printing of a handbook on a alpine vegetation in and around the sanctuary	LS	0.25	PWLS	LS	0.25	PWLS
7	Erection of signages at strategic places	4	0.40	JNM Road	4	0.40	JNM Road
8	Creation of fire line	20 km	2.00	PWLS	20 km	2.00	PWLS
9	Purchase of Fire fighting tools like rakes, beaters, hoes, spades, alkathene pipes, torch lights etc	5 set	1.00	do	5 set	0.99	do
10	Purchase of water sprayer for fire fighting (committed expenditure)	2 no	0.50	do	2 no	0.50	do

11	Camping equipment for fire fighting purpose (committed expenditure)	2 sets	0.50	do	2 sets	0.50	do
12	Procurement of searchlight	3 nos	0.36	do	3 nos	0.36	do
13	Procurement of hand held GPS	3 no	0.75	do	10 km	0.75	do
	<b>Sub-Total</b>		<b>24.78</b>			<b>24.75</b>	
II	<b>Recurring Activities</b>						
14	Maintenance of water holes of providing water to wild animals	4(2 high altitude & 2 low altitude)	0.80	PWLS	4(2 high altitude & 2 low altitude)	0.80	PWLS
15	Clearance of Wildlife trails- (Low Altitude)	8 km	4.00	PWLS (South)	8 km	3.99	PWLS (South)
16	Anti poaching & trap demolition	4(2 high altitude & 2 low altitude)	2.00	PWLS	4(2 high altitude & 2 low altitude)	2.00	PWLS
17	Designing & Printing of brochures and pamphlets about the sanctuary	200	0.40	do	200	0.40	do
18	Awareness campaign	4 camp	0.40	do	4 camp	0.40	do
19	Construction and providing salt licks at strategic locations (location as per APO)	8 no	3.20	do	8 no	3.20	do
20	Engagement of Firewatchers	10	0.90	do	10	0.90	do
21	Control burning	10 ha	1.00	do	10 ha	1.00	do
22	Compensation for crop damaged by the wild animals	LS	1.00	do	LS	1.00	do
	<b>Sub-Total</b>		<b>13.70</b>			<b>13.69</b>	
	<b>Grand Total</b>		<b>38.48</b>			<b>38.44</b>	

## II. Kyongnosla Wildlife Sanctuary, Sikkim

SN	Item of Work	Sanctioned			Actual		
		Quantity	Amount	Location	Quantity	Amount	Location
I	<b>Non-Recurring Activities</b>						
1	Creation of water hole for providing water to wild animal at Panch Gothey & 4122 area	2 no	1.00	Inside kyongnosla Alpine WLS	2 no	1.00	Panch Gothey & 4122
2	Habitat improvement in critical Wildlife Habitats (location as per APO)	8 nos	4.00	do	8 nos	3.99	Inisde KAS
3	Erection of boundary pillars along the western boundary –(50 no) and northern boundary of the sanctuary –(25 no)	50no (WB) 25 nos (NB)	4.15	do	50 no (WB) 25 nos (NB)	4.15	Northern boundary of KAS
4	Survey of sanctuary compartments very HA (northern part)	5 no	0.85	do	5 no	0.85	Northern part of KAS
5	Procurement of wireless sets	5 no	1.00	do	5 no	1.00	KAS
6	Development of wildlife viewing bunkers & platforms	4 no	1.00	do	4 no	1.00	Inside KAS

7	Procurement of specialised high altitude camouflage clothes, boots & water bottle for field staff	10 no	0.50	do	10 no	0.50	KAS
8	Development of log hut complex at Kyongnosla	1 no	1.00	do	1 no	1.00	do
9	Construction and provision of salt licks	2 no	0.50	do	2 no	0.50	do
10	Construction of trekking hut at panch gothay	1 no	2.00	do	1 no	1.99	Panch Gothay
11	Creation of fire line	10 km	1.00	do	10 km	1.00	South of KAS
12	Purchase of fire fighting tools like rakes, beaters, hoes, spades, alkathene pipes, torch light etc	5 set	1.00	do	5 set	0.99	KAS
13	Purchase of water sprayers for fire fighting (committed expenditure)	2 no	0.50		2 no	0.50	do
14	Camping equipment for fire fighting purpose (committed expenditure)	2 set	0.50		2 set	0.50	do
15	Procurement of searchlight	3	0.36		3	0.36	do
16	Procurement of handheld GPS	2	0.50		2	0.50	do
	<b>Sub Total (A)</b>		<b>19.86</b>			<b>19.83</b>	
<b>II</b>	<b>Recurring Activities</b>						
17	Strengthening of protection measures and combing operation at Panch Gothey & Tamzey	2 no	1.50		2 no	1.50	Panch Gothay & Tamze
18	Maintenance of transect line at Ipchu to Rajadunga	10 km	0.40		10 km	0.40	Rajadung a
19	Renovation of watch tower at Goral rock	1 no	1.00		1 no	1.00	Goral rock
20	Awareness Programme	LS	0.50		LS	0.50	17th Mile
21	Clearance of Wildlife trails at 4122 to Panch Gothey	4 km	2.00		4 km	2.00	4122 to Panch Gothey
22	Survey and inventorisation including printing of handbook on alpine vegetation	50 no	0.25		50 no	0.25	KAS
23	Designing & printing of brochure and pamphlets about sanctuary	200 no	0.40		200 no	0.40	do
24	Repair of log bridges (location as per APO)	5 no	0.50		5 no	0.50	Inside KAS
25	Engagement of firewatchers for 3 month @ Rs. 100/day/person	5 person	0.45		5 person	0.45	do
	<b>Sub Total (B)</b>		<b>7.00</b>			<b>7.00</b>	
	<b>Total (A+B)</b>		<b>26.86</b>			<b>26.83</b>	

III. Fambonglho Wildlife Sanctuary, Sikkim							
SN	Item of Work	Sanctioned			Actual		
		Quantity	Amount	Location	Quantity	Amount	Location
<b>I</b>	<b>Non-Recurring Activities</b>						
1	Survey and conservation of traditional water sources	4 no	1.00	Phaksule, Dhobaney and Kaulay	4 no	1.00	Phaksule, Dhobaney and Kaulay

2	Development of water holes	4 no	2.00	Gurdum, Deorali and Dhap	4 no	2.00	Gurdum, Deorali and Dhap
3	Capacity building and exposure trips-field staff and EDCS members	LS	1.00	NA	LS	1.00	NA
4	Habitat development for Herbivores	6 no	3.00	Gurdum, Chuli, Dhap, Deorali, Thangsing and Dobaney	6 no	3.00	Gurdum, Chuli, Dhap, Deorali, Thangsing and Dobaney
5	Construction of Bridle Path	1 km	2.00	Tumin Pokhari to Deorali	1 km	1.99	Tumin Pokhari to Deorali
6	Clearance of wildlife Trails	5	3.45	Khopichule, Dhanbari, Sang and Golitar	5	3.43	Khopichule, Dhanbari, Sang and Golitar
7	Erection of compartment boundary pillars	100 no	4.30	FWLS	100 no	4.15	FWLS
8	Development of the Tinjurey and its approached area	1 no	1.00	Tinjurey	1 no	0.98	Tinjurey
9	Construction of a watchtower	1	4.00	Chuli/Tinjurey	1	3.97	Chuli/Tinjurey
10	Creation of new fire line	10 km	1.00	Gyanak-Ramitey dara- Thangsing, Rumtek Old monastery- Lingtam, Nazitam- Martam- Sang	10 km	1.00	Gyanak-Ramitey dara- Thangsing, Rumtek Old monastery- Lingtam, Nazitam- Martam- Sang
11	Purchase of Fire fighting tools like rakes, beaters, hoes, spades, alkathene pipes, torch lights etc	5 set	1.00	FWLS	5 set	1.00	FWLS
12	Purchase of water sprayer for fire fighting (committed expenditure)	2 no	0.50	do	2 no	0.48	do
13	Procurement of hand held GPS	2 no	0.50	do	2 no	0.48	do
14	Procurement of motor bike	2	1.00	do	2	1.25	do
	<b>Sub-Total</b>		<b>25.75</b>			<b>25.73</b>	
II	<b>Recurring Activities</b>						
15	De-silting and creation of the twin lakes at Tumin and development of the area-Tumin	1	2.00	Garey Pokahri, Tumin	1	1.99	Garey Pokahri, Tumin
16	Awareness programme	4	0.40	Gangtok Sang, Golitar and Samdong	4	0.40	Gangtok Sang, Golitar and Samdong
17	Designed and printing of brochures and pamphlets about the sanctuary	200 no	0.40	do	200 no	0.40	do
18	Clearing of transect lines (location as per APO)	5 km	0.75	Golitar-Nunthaley, Thambara, Dovaney-Tumin	5 km	0.74	Golitar-Nunthaley, Thambara, Dovaney-Tumin
19	Erection of Signages	5 no	0.50	Gollitar, Samdong road, Pagla Bir	5 no	0.48	Gollitar, Samdong road, Pagla Bir
20	Compensation for Crop damaged by the wildlife animals	LS	2.00	Villages adjoining to FWLS	LS	2.00	Villages adjoining to FWLS
21	Engagement of fire watchers	10	0.90	FWLS	10	0.90	FWLS
22	Control burning	5	0.50	Sang, Ben, Thangsing & Ramitey	5	0.50	Sang, Ben, Thangsing & Ramitey
	<b>Sub-Total</b>		<b>7.45</b>			<b>7.41</b>	
	<b>Grand Total</b>		<b>33.20</b>			<b>33.14</b>	

## Chapter-25

### KHANGCHENDZONGA NATIONAL PARK

#### **I. Name, Location, Constitution and Extent:**

<b>Name</b>	Kangchendzonga National Park
<b>Declaration No</b>	Sikkim Official Gazette 95
<b>Declaration Date</b>	26 <sup>th</sup> August 1977 with an initial area 835 sq.kms
<b>Area</b>	Extended to 1784.00 sq km. Vide Not. No. 1/KNP/WL/F27 dated 19.05.1997
<b>Altitude</b>	1220 – 8585 m
<b>Nearest Town</b>	Mangan & Chungthang in North District & Gyalsing in West Districts of Sikkim
<b>Road Head</b>	Chungthang, Lachen, Thangu Lingya in North and Yuksom, Tashiding-Labdang, Uttarey in West Sikkim.
<b>Range</b>	Chungthang, Dzongu and Yuksam

The Khangchendzonga National Park occupies as much as 25.14 percent of the total geographical area of the State of Sikkim. The major portion of the park lies in the North District and 1/3 area lies in West district. The major portion of the National Park comprises of Glaciers, mountains and lakes. There are about 18 Glaciers and prominent amongst them are, South Lhonak, Langbu, Changsang, Hidden, Tent and Nepal Gap Glacier, Tongshiong, Talung, Onglakthang, East Rathong, Zumthul Phuk and the largest among all is Zemu Glacier. Besides, over 17 crystal clear and placid lakes, the Khangchendzonga National Park is blessed with more than 19 mountain peaks and they boast some of the most magnificent scenery of snow clad in the world. It is place of beauty, charm, peace and remote from the main streams of events. Amongst all the peaks, the most glamorous, magnificent, panoramic and predominant peak is the Mount Khangchendzonga (8585m.), world's third highest peak, which literally narrates the Guardian Deity of Sikkim, along with the other peaks namely: in the middle flank is the beautiful Mount Narsing (5825 m.), Mount. Pandim (6691m.) Mount Kuber on the Southern side, the Twin (7350 m.), Nepal Peak (7150 m.), Tent Peak (7365 m.) etc. These lofty peaks, totally or partly have occupied the Khangchendzonga National Park and has influenced the climate of the region and rendered a conducive environment for divers bio-resources including, valuable, rare and endangered species of flora, fauna and avi-fauna. Besides various fauna and avi-fauna, the Park is also the store-house of medicinal plants and other valuable floras.

There are programmes and activities which are being undertaken by the Forest Department through the Schemes Sponsored by MoEF, Government of India and the State Government, to improve the Park from different means of management, viz.

1. Afforestation activities, and improvement of communication.
2. Intensification of management and protection of natural resources of the National Park
3. Habitat improvement works and immunization of livestock of fringe villages
4. Soil conservation and stream bank erosion control/works.
5. Awareness generation and nature education activities.
6. Health camps for populace of fringe villages
7. Construction and creation of amenities for frontline forest staff.
8. Research and monitoring works.
9. Management of regulated Eco-tourism
10. Social welfare activities for sustainable development of buffer villagers
11. Conservation and documentation of Natural resources of the Park, etc.

II. NAME OF THE SCHEME: ASSISTANCE TO STATES FOR DEVELOPMENT OF PARKS AND SANCTUARIES AND EXPENDITURE DURING 2009-2010

Item of Woks	Sanctioned	Achievement	
	Amount (Rs. in lakh)	Amount	Quantity
<b>Completion of Items approved during 2008-09</b>			
<b>Non-recurring Activities:</b>			
Demarcation of KNP boundary erection of CC pillar with angle iron post	5.00	5.00	10. Km.
Constrution of rescue centre and staff quarter	5.00	5.00	1. No.
Construction trekking trail	1.25	1.25	5.Km.
Construction of waterholes to provide water for wild animals	2.50	2.50	25. Nos.
Habitat management-bamboo plantation to supplement the food stock for Red panda & Bear	2.00	2.00	20.ha.
Sowing/dibbling/broadcasting of seeds of indigenous spp.s.in landslide & degraded areas	1.00	1.00	10. ha.
Construction of Hides/talus	1.50	1.50	1 No.
Eco-development activities-socio-economic survey of forest village	1.00	1.00	2 ranges
Creation of Fireline (new)	2.00	2.00	10.Kms
Purchase of Firefighting tools like,beaters,hoes,spades,alkathene pipe, torchlight, etc.	1.00	1.00	5. sets
Purchase of water sprayer for fire fighting	0.50	0.500	2 Nos.
Camping equipments for fire fighting purpose	0.50	0.50	2. sets
Procurement of searchlight	0.30	0.30	3 Nos.
Procurement of hand held GPS	0.50	0.50	2 Nos.
Up gradation of old trekking trail	1.00	1.00	2.Km
Livestock immunization	0.50	0.50	200.Nos.
Control of forest fire	3.00	3.00	30 ha.
Wildlife enforcement, combing operation of the entire park	1.00	1.00	6.Sq.Km.
Patrolling and surveillance	1.00	1.00	LS
Ex-gratia payment and compensation for crop damage by wild animals	2.00	2.00	LS
Awareness & Extension Education	0.25	0.25	1. No.
Renovation of Forest Guard Qrt.	1.00	1.00	1.N0
Renovation of Log Hut	1.00	1.00	1.No.
Engagement of Firewatchers	1.35	1.35	15 Nos.
Control burning	1.00	1.00	10. Nos.
<b>Sub-Total:</b>	<b>13.10</b>	<b>13.10</b>	<b>8.km, 228. nos, 30.ha.</b>
<b>Grand total</b>	<b>37.15</b>	<b>37.15</b>	<b>33.Km. 262 nos. 60.ha.7set</b>

**B. KHANGCHENDZONGA BIOSPHERE RESERVE:**

The boundaries of Khangchendzonga Biosphere Reserve and National Park were amended as suggested by the Survey of India; and whereas since the Khangchendzonga Biosphere Reserve is located in a trans-boundary Himalayan range, the western and the north-west boundary taken is India – Nepal and India – China international boundary and for the remaining areas, Reserve Forest line, as per Topo-sheets (Survey of India) and prominent structures, natural boundaries, like streams, rivers, ridges, peaks and mountains etc. have been taken as the boundary line of the Biosphere Reserve; and whereas the last notification of the year 2000, the total area of the Biosphere Reserve was 2619.92 Km<sup>2</sup>, out of this, an area of 1784 Km<sup>2</sup> forming Khangchendzonga National Park and 835.92 Km<sup>2</sup> around this Park comprises the buffer zones, respectively; Now therefore, in order to cover all the fringe villages which have direct or indirect dependency on the adjoining buffer zones for the effective management of the KBR, participation of the people is a must, by involving them from the forest fringe villages in various forestry activities, including, seasonal works, eco-tourism, protection and conservation of natural resources, which may bring the sense of ownership among the people. As well, in majority of the places within these areas the private lands and forest lands are so closely positioned, i.e. almost intermixing, thus, the chances of encroachment of forest areas are extremely high. Consequently, the management of the Biosphere Reserve with a limited and handful of forest frontline staff would become quite difficult without involving the people of the fringe villages. Therefore, by declaring a transition zone, the concept of co-existence of nature and human being while respecting the needs of each other would be fulfilled, in view of above facts and figures the State Government is hereby please to notify the details of the Khangchendzonga Biosphere Reserve.

**I. TOTAL AREA OF KHANGCHENDZONGA BIOSPHERE RESERVE AS CORE ZONE, BUFFER ZONE AND TRANSITION ZONE:**

(a.)	<u>Area of Core Zone:</u> (Khangchendzonga National Park )	1784.00 Km <sup>2</sup>
(b.)	<u>Area of Buffer Zone:</u> (i) Buffer Zone – I: (ii) Buffer Zone-II: (iii) Buffer Zone-III: (iv) Buffer Zone-IV:	154.48 Km <sup>2</sup> 55.29 Km <sup>2</sup> 29.37 Km <sup>2</sup> 596.78 Km <sup>2</sup>
	Total Buffer Zone:	835.92 Km <sup>2</sup>
	Total area of Core & Buffer zones:	2,619.92 Km <sup>2</sup>
(c)	<u>Area of Transition zone:</u> (i) Transition zone Part I : (ii) Transition zone Part II: (iii) Transition zone Part III:	28.58 Km <sup>2</sup> 111.15 Km <sup>2</sup> 171.47 Km <sup>2</sup>
	Total area of Transition zones:	311.20 Km <sup>2</sup>
	Total area of KBR [ (a) Core, (b) Buffer and (c) Transition zone]:	2,931.12 Km <sup>2</sup>



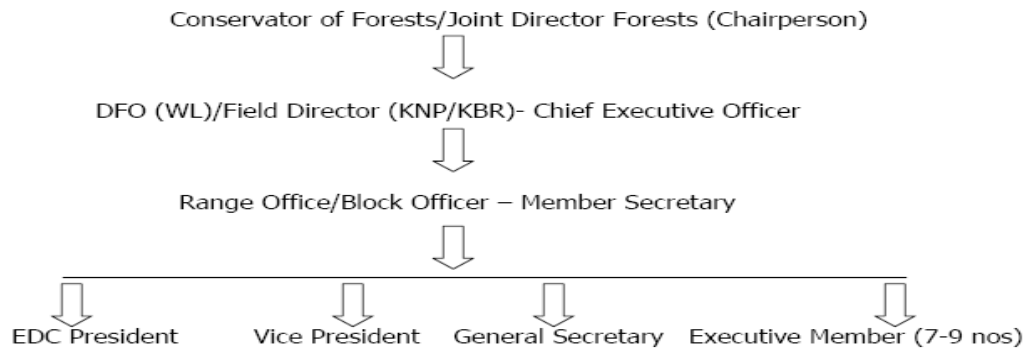
**II. THE FOLLOWING ARE THE IMPORTANT ASPECTS OF THE KHANGCHENDZONGA BIOSPHERE RESERVE, NAMELY:-**

- (a) The core and buffer zone and manipulation activities which may be permitted in the buffer zone will be in conformity with general guidelines for management of biosphere reserves.
- (b) A Transition Zone, where the management structure of the department comprising civil society and other stakeholders play an effective role, would be mandatory.
- (c) The core zone of the Biosphere Reserve will be kept absolutely undisturbed.
- (d) The constitution of the Biosphere Reserve by itself will not in any way change the status of legal ownership of land and forests nor affect the rights of tribal and local people in any way.
- (e) State Government will constitute a Biosphere Reserve Management Committee at the state level in accordance with the guidelines for ensuring scientific management of the Biosphere Reserve
- (f) The Government of Sikkim will nominate an officer as Director of the Biosphere Reserve. He/She may be an existing functionary who may not necessarily be an exclusive functionary for this purpose.

**III. EXPENDITURE STATEMENT FOR IMPLEMENTATION OF MANAGEMENT ACTION PLAN OF KHANGCHENDZONGA BIOSPHERE RESERVE, SIKKIM FOR THE YEAR 2008-09.**

Item of Work	Sanctioned		Achievement	
	Amount	Quantity	Amount	Quantity
Toilets for poor families of buffer villages	5.25	15	5.25	15
Distribution of cardamom rhizomes	3.75	150 Families	3.75	150 Families
Cattle immunization	3.00	180 nos.	3.00	180 nos.
Health camp	1.00	--	1.00	--
Nature trip	1.00	22 nos	1.00	22 nos
Broom grass pltn.	3.415	30 ha	3.415	30 ha
Bamboo plantation	7.54	30 ha	7.54	30 ha
Maint. Of 2 <sup>nd</sup> yr. plantation	2.40	30 ha	2.40	30 ha
Improvement & maint. Of high altitude water bodies.	6.00	6 nos	6.00	6 nos
Approach road	8.00	0.5 Km	8.00	0.5 Km
Renovation of log hut.	4.00	1 no	4.00	1 no
Const. of trekking trails	5.00	5 km	5.00	5 km
Development of camping sites	4.00	2 nos	4.00	2 nos
Purchase of camping equipments	1.00	1 no	1.00	1 no
Drinking water supply	5.00	L. S	5.00	L. S
Awareness on protection of natural resources of KBR	2.00	L. S	2.00	L. S
Signage, natural resource posters	1.00	--	1.00	--
Monitoring & Evaluation	1.00	L. S	1.00	L. S
Over Head Expenses	1.00	L.S	1.00	L.S
<b>TOTAL</b>	<b>65.355</b>		<b>65.355</b>	

- C. KHANGCHENDZONGA NATIONAL PARK-FOREST DEVELOPMENT AGENCY;  
 Forest Development Agency (FDA) under National Afforestation and Eco-Development Board of National Afforestation Programme(NAP), Government of India. All the activities are carried out through the ECO-Development Committees representing all the buffer villages of Park.
- I. STRUCTURE/COMPOSITION OF EDCS (ECO-DEVELOPMENT COMMITTEES)-  
 The following chart depicts the structure and composition of EDs for KBR under KNP-FDA



Eco-Development Committee Members (One member of every household of respective village is enrolled as EDC members). Each EDC comprises of 10 to 12 Executive members, as the part of elected body. It should be noted that all the executive members are elected by the respective villagers after every two years and also nominate two Panchayat members from Gram Panchayat Unit in each EDC. The EDCs formed under Transition zone of KBR are listed out as follows:

II. LIST OF ECO-DEVELOPMENT COMMITTEES (EDCS) IN THE PROPOSED TRANSITION ZONE UNDER KNP-FDA:

SL.NO	NAME OF EDCs	RANGE/BEAT
<b>1. YUKSOM RANGE: WEST SIKKIM</b>		
1	Thoka	Yuksam
2	Kyongtey	- do -
3	Chung	- do -
4	Hngry	Yuksam
5	Nesa	Tashiding
6	Kongri-naku	- do -
7	Lbdang	- do -
8	Krjee	Tashiding
9	Cowri	Yuksam
10	Pokhari-Mngnam	Tashiding
<b>2. CHUNGTHANG RANGE: NORTH SIKKIM</b>		
11	Teng-Cungthang	Chungthang
12	Rabom-Lchen	Lachen
13	Bop-Cungthang	Chungthang
<b>3. DZONGU RANGE: NORTH SIKKIM</b>		
14	Leek	Dzongu
15	Sakyong	- do -
16	Pentong	- do -
17	Lingya	- do -
18	Tingvong	- do -
19	Saffu	- do -
20	Shipgyer	- do -

III. PROGRESS REPORT FOR THE YEAR ENDING 31ST.MARCH,2010  
 KHANGCHENDZONGA NATIONAL PARK-FOREST DEVELOPMENT  
 AGENCY (WEST AND NORTH) SIKKIM.

No. of EDCs: 20 no.

Sl No	Items	Physical (area in ha.)		Finnancial (Rs in Lakhs)	
		Target for the year	Total achievement	Outlay for the year	Total Expenditure
1	Aided Natural Regeneration (200 plants/ha)				
	a) advance work	50	50	2.60	2.60
	b) Creation	100	100	4.93	4.93
	c) Maintenance I year	50	50	1.53	1.53
	II year	100	100	1.20	1.20
	III year	135	135	1.04	1.04
	<b>Sub-total</b>	<b>100</b>	<b>100</b>	<b>11.30</b>	<b>11.30</b>
2	Artificial regeneration (1100 plants/ha)				
	a) advance work	50	50	4.56	4.56
	b) Creation	100	100	9.98	9.98
	c) Maintenance I year	50	50	1.88	1.88
	II year	100	100	1.82	1.82
	III year	95	95	1.60	1.60
	<b>Sub-total</b>	<b>100</b>	<b>100</b>	<b>19.48</b>	<b>19.48</b>
3	Bamboo plantation (625 plants/ha)				
	a) advance work	50	50	2.48	2.48
	b) Creation	100	100	5.43	5.43
	c) Maintenance I year	50	50	1.02	1.02
	II year	100	100	0.99	0.99
	III year	95	95	0.87	0.87
	<b>Sub-total</b>	<b>100</b>	<b>100</b>	<b>10.79</b>	<b>10.79</b>
4	Pasture development / Silvi pasture (400plants/ha)				
	a) advance work	50	50	2.96	2.96
	b) Creation	100	100	6.48	6.48
	c) Maintenance I year	50	50	1.22	1.22
	II year	100	100	1.18	1.18
	III year	100	100	1.11	1.11
	<b>Sub-total</b>	<b>100</b>	<b>100</b>	<b>12.95</b>	<b>12.95</b>
5	Planting of canes (625 plants/ha)				
	a) advance work	50	50	2.96	2.96
	b) Creation	50	50	2.59	2.59
	c) Maintenance I year	0	0	0.00	0.00
	II year	100	100	1.18	1.18
	III year	50	50	0.44	0.44
	<b>Sub-total</b>	<b>50</b>	<b>50</b>	<b>7.17</b>	<b>7.17</b>
6	Mixed plantation of trees having MFP and Medicinal values (1100 plants/ha)				
	a) advance work	50	50	4.56	4.56
	b) Creation	100	100	9.98	9.98
	c) Maintenance I year	50	50	1.88	1.88
	II year	100	100	1.82	1.82
	III year	100	100	1.71	1.71
	<b>Sub-total</b>	<b>100</b>	<b>100</b>	<b>19.95</b>	<b>19.95</b>

Sl No	Items	Physical (area in ha.)		Finnancial (Rs in Lakhs)	
		Target for the year	Total achievement	Outlay for the year	Total Expenditure
7	Regeneration of Medicinal herbs and shrubs of medicinal value (2000plants/ha)				
	a) advance work	0	0	0.00	0.00
	b) Creation	50	50	7.14	7.14
	c) Maintenance I year	50	50	2.24	2.24
	II year	0	0	0.00	0.00
	III year	40	40	0.98	0.98
	<b>Sub-total</b>	<b>50</b>	<b>50</b>	<b>10.36</b>	<b>10.36</b>
8	Artificial Regeneration (Seabuckthorn Plantation)				
	a) advance work	0	0	0.00	0.00
	b) Creation	50	50	5.99	5.99
	c) Maintenance I year	0	0	0.00	0.00
	II year	0	0	0.00	0.00
	III year	0	0	0.00	0.00
	<b>Sub-total</b>	<b>50</b>	<b>50</b>	<b>5.99</b>	<b>5.99</b>
	<b>Total of works</b>	<b>900</b>	<b>900</b>	<b>98.35</b>	<b>98.35</b>

#### IV. Mechanism of participation

Management of the Protected Area and Biosphere Reserves with people's participation is an approach, which requires changes in the mindset of the officials, field level functionaries and people participating in joint bio-resource management concept. The constitution of the Eco-development committees was a mandatory requirement as per the FDA guidelines issued by NAEB, MOEF, Government of India. After constitution of Eco-development committees with wide mass base, micro planning exercise with PRA tools of each EDC was carried out in detail with the help of NGOs The Mountain Institute (India).

## Chapter -26.

### BIODIVERSITY RESEARCH CELL, RESEARCH, EXTENSION & EDUCATION CIRCLE

#### ANNUAL WORK PROGRAMME

	I. ENBLOC WAGES: PARTICULARS	AMOUNT IN RS.
1	WAGES: Continuation of monitoring activities in Tso Lhamo proposed cold desert protected area and Computerisation of data including regular office duties ( <i>en bloc</i> 2 M/R wages at Gangtok and Tso Lhamo) ( <i>Sanctioned vide no.05/GOS/FEWMD/Wages, dated: 13<sup>th</sup> Aug 2009</i> )	120450
	II. OFFICE, LABORATORY AND FIELD RESEARCH	
2	1. Purchase and Maintenance of essential equipments: 2. Expenditure related to Forest Centenary celebrations:	29,550
	GRAND TOTAL Wildlife (Biodiversity) Research (P)	<b>1,50000</b>
	Grand Total: Rs. 1, 50, 000/- (RUPEES ONE LAKH FIFTY THOUSAND) only	

#### PHYSICAL TARGET ACHIEVED:

##### **Gist of Biodiversity Research Activities for 2009-1010**

The Biodiversity Cell under Research, Extension & Education Circle of the Department of Forest, Environment and Wildlife Management, Government of Sikkim is involved in conducting field research, compiling biodiversity research information from various institutes (local, national, international) working in Sikkim, as well as processing applications for research in various sectors through respective Circles (Wildlife, Territorial, KBR, SMPB). In addition the Biodiversity Cell also assists the other Circles in various related issues related to Publicity and Publication works. Also the Biodiversity Cell is the *de-facto office of the* Sikkim State Biodiversity Board (SSBB), attempting to carry out all the work related to the Board. SSBB was notified in March 2006 with its own Act and Rules called "Sikkim State Biological Diversity Rules, 2006". Upon receipt of the first fund instalment from NBA in 2008, SSBB was enabled to establish office in the office of Sr. Research Officer (WL).

One of the first activities undertaken was the printing of wall and desk Calendars for 2009 titled "Winged Wonders: Butterflies of Sikkim" depicting 64 species in their respective families. These were widely disseminated especially to schools throughout the state and all relevant institutions, as also eco-tourism institutions such as Travel Agents Association of Sikkim (TAAS). All meetings called for by NBA and MoEF were also attended including those at Hyderabad, Kolkata, Chennai and Delhi. All possible inputs were given to the experts working on the UNDP-GEF project proposals at various stages as required.

In addition, the following Awareness and Capacity Building Programmes were also achieved:

- **Capacity building programmes**, participating in workshops, sensitization, awareness and training related to biodiversity of Sikkim and conservation issues with local Environmental NGOs and other departments, media, etc. as per table below
- **Published two field guides** with detailed colour photographs in collaboration with Botanical Survey of India (BSI) '**Mushrooms** of Sikkim-1: Barsey Rhododendron Sanctuary' (160 pages ISBN: 978-81-909680-0-3) by Dr. Kanad Das and '**Ferns and Fern-Allies** of Sikkim' ISBN: (978-81-909680-1-0) by Dr. B. S. Kholia. Both books were released during Forest Centenary closing on December 2009 and International Rhododendron Festival & Conference in March-April 2010 by Hon. Chief Minister of Sikkim Dr. Pawan Chamling.
- **Collection and compilation** of all past/ongoing studies on biodiversity in Sikkim underway.
- **Collaboration with environmental NGOs** TMI-India and Society for Better Environment in programs for mass awareness regarding Biodiversity, Access and Benefit Sharing and its sustainable use at Khamdong, Singtam, Central Pendam & surrounding villages and small local committees formed.

- Database creation of Biodiversity underway and all Range Officers given task of **checking the Nepali translation of Peoples' BD Register Draft**, by Dr. Ghanashyam Sharma through Member Secretary SBB.
- **Celebration of International Biodiversity Day 2009** involving Forest, Agri/Horti/Flori Dept, AHLF&VS Dept, EDCs and some local NGOs highlighting Invasive Alien Species and role of government departments and individuals or institutions in their management and control. A meeting was organized in the Forest Conference Hall with all participants with PowerPoint presentations and oral discussions, including a session on stray and feral dog control issues by Sikkim Anti-Rabies and Animal health Association (SARAH) Division of the Department of Animal husbandry, Livestock, Fisheries and Veterinary Services (AHLF&VS)
- **Organized local researchers meeting** with Biodiversity Experts from NCBS, Bangalore
- **Compiled, edited and published Forest Centenary Souvenir**
- **Organized for two major Forest Centenary Mobile Photo Exhibitions at Saramsa, East Sikkim and Yumthang, North Sikkim** in collaboration with Namgyal Institute of Tibetology's Dr. Anna Balikci-Denjongpa, Anthropologist.
- **Assisted with recognition of Centennial Butterfly Scarce Jester *Symbrenthia silana* and Centennial Tree White Cherry.**
- Assisted in organization of hunt for **Heritage Tree**,
- Compiled lists of **Threatened Species of Flora and Fauna**.
- **Published book** on a study of biodiversity of Raj Bhawan Complex leading to compilation of full colour hard-bound 82 pages book '**Biodiversity of Raj Bhawan** (ISBN: 978-81-909680-2-7)
- **Bird Tourism Charter release in Sikkim through Dr. Asad Rahmani, Director BNHS** among local eco-tourism entrepreneurs, students and NGOs;
- **Meetings with other visiting scientists** (Birds: Dr. Farah Ishtiaq, Dr. Chris Bowden; Butterflies: Dr. Krushnamegh Kunte, Dr. Deepa Agashe)
- Matter of **reconstitution of State Biodiversity Board** underway, following which issue of creation of posts for staff under SBB-Sikkim, notification of Expert Committee to assist SBB-Sikkim and some amendments of the Act and Rules is to be taken up.

Details of Biodiversity Research Activities for 2009-1010

#### 1. BIODIVERSITY RESEARCH

Date	Research	Name of Programme	Organized by	Venue
	Maintenance of State Forest Herbarium			
1 Apr 09	Field visit by 10 students Whirlington School, UK and Guides	Orchid Survey by Dr. Simon and Dr. Lauren	Mr. Mohan Pradhan	Fambonglo WL Sanctuary
23 Jun 09	Interaction with scientists from NCBS & ATREE (Dr. Suhel Quader, Asst. Prof. Ecology & Evolution Conservation, Dr. Mahesh, Wildlife Biology and Conservation and Dr. Jagdish Krishnaswamy, Member)		Dr. Uma Ramakrishnan, Asst. Prof. Ecology & Evolution	
26 Jun 09	Organised programme through Dr. Asad Rahmani and CWLW.	Launch of BLI Charter for Tourism	BNHS & FEWMD	Forest Conference Hall
25 Oct -4 Nov 09	Survey of Pangolakha WLS with WCS MSC students		Dr. Ajith Kumar, Course-in-Charge	
25 Aug 09	Provided information on (under State Knowledge Commission); Species native to state and new species introduced.	2 MBA students of SMIT: Mr. Partha Banerjee and	Under State Knowledge Commission	

	Any study on glaciers in Sikkim and impact of climate on Himalayan Glacier? Any study on Sikkim's Bio-diversity and Plans and Programmes for creating Biospheres and for preserving State's Biosphere Reserve	Prakash Kumar Shaw		
4 Mar 10	Hand outs for educated unemployed youth	Self Employment Mela	GoS	Chintan Bhawan
6 Mar 10	Nominated Member vide letter no. 432/SSCS&T/2010	Local Advisory Committee	DBT's Natural Resources Awareness (DNA) by SSCS & T	SSCS&T
8 Dec 09	Forest Centenary Programme	RED PANDA Stamp Presentation Function	FEWMD	Saramsa
7 Oct 09	WL Week programme	Wildlife Week		Lachung
13 Feb 10	Survey Migratory Birds and Orchids		FEWMD	Ravangla.
16-17 Feb10	Interviewed	>30 research fellows for Ph. D. studies on Bioresources of Eastern Himalaya	ATREE & NCBS	Dev. Area
22 Mar 10	Information to Photographers Pranav Basu and Surajit Chakraborty for:	Khangchendzonga Tourist Villa & Amusement Park, RMDD	Cave Restaurant / café for Rhodo diorama, 22 murals, one orchid, one Butterfly diorama,	
2009-2010	Project Snow Leopard preparation			

## 2. BIODIVERSITY RESEARCH BY OTHER ORGANIZATIONS FACILITATED:

Sl. No.	Organization	Researchers	Name of Project	Date on which permission issued
1	Punjabi University	Manpreet Singh, Sajad Hussain, Muzamil Ahmed, Rahul Joshi, Rifat Hussain Raina	UGC Research Project under SAP Scheme, (DRS Project on the insect Diversity of Lepidoptera, Hym, Trycoptera)	24/4/2009
2	BSI	Avishek Bhattacharjee	Collection of Wild Plant Samples	6/5/2009
3	WII	Kamal Poudyal, Tapajit Bhattacharya	Developing spatial database on large carnivores, their prey and habitat in KBR	6/5/2009
4	Ghent Uni., Belgium & BSI-Sikkim	Prof. Annemieke Verbeken, Dr. Kobeke Van de Putte, Dr. Kanad Das	Macrofungal Survey	13/5/2009
5	S & Tech.		Studies on Sea Buckthorn in N/Sikkim	15/6/2009
6	CABI and NBPGR Delhi	Djamila Djeddour, Richard Shaw	Biological Control of Invasive Species, viz., Himalayan Balsam ( <i>Impatiens glandulifera</i> and <i>Hedychium</i> spp.	1/7/2009
7	Kalyani University	Sarvani Ghose	Ph. D research on Herpetofauna of Sikkim	9/7/2009
8	CISMHE, Delhi University	Yasmeen Telwala	Impact of climate change on altitudinal distribution of plants in North Sikkim	15/7/2009
9	Punjabi University	Manpreet Singh, Sajad Hussain, Muzamil Ahmed, Vikram Singh Rathore, Rifat Hussain Raina	UGC-DRS-SAP-1, Government of India: Insect Taxonomy :Insects study in Sikkim	11/9/2009

10	NCBS	Dr. Ajith Kumar and his team of M. Sc. Students	Study tour	22/10/2009
11	Indian Institute of Tropical Meteorology, Pune	H. P. Borgaonkar and team	Geosphere-Biosphere Program of ISRO: Development of Tree-Ring Data Network over different parts of India and Reconstruction of past Climate for last 1000 years	22/10/2009
12	GBPIHED	L. K. Rai, Y. K. Rai	Assessment of Biodiversity values and ecosystem services in the protected areas of Sikkim	26/10/2009
13	Banaras Hindu University	A. K. Mishra and team	Physiological, biochemical and molecular analysis of Frankia strains associated with <i>Hippophae salicifolia</i> D. Don	26/10/2009
14	TMI-Sikkim	Dr. Ghanashyam Sharma, Nima Tashi Bhutia, Durga Pd. Sharma	Case study on Governance mechanism on Tran boundary illegal trade in the Singalila range	25/1/2010
15	University of Pune	A.B. Nadaf and Rahul L. Zanan	Molecular phylogeny and genetic diversity assessment in Indian Pandanus species by DNA fingerprinting	5/3/2010
16	BSI	Devendra Singh, Shuvadeep Majumdar	Hepaticae and Anthocerotae of Sikkim	6/3/2010

### 3. MEETING, SEMINAR, WORKSHOPS RELATED TO BIODIVERSITY RESEARCH

Date	Meeting/Seminar/Workshop	Name of Programme	Organized by	Venue
5 Feb 10	Training, Research & Academic Council	TRAC meeting	WII	Dehradun
21 Sep 09	TRAC meeting	Training, Research & Academic Council	WII	Dehra Dun
10-11 Sep 09	National Biodiversity Board: Steering committee Mtg.	for UNEP/GEF Project	NBA	Kolkata
15 Sep 09	2nd National Steering Committee meeting	PSL	MoEF,	New Delhi
19-20 Sep 09	Annual Research Seminar (ARS)		WII	Dehra Dun
19-22 Aug 09	1. National Biodiversity Authority (NBA); Talk at Madras Naturalists' Society, 2. Interacted with wildlife film maker Shekar Dattatri, 3. Dr. N. Balaraman ex- VC TANUVAS and erstwhile animal nutritionist / scientist., ICAR Sikkim	Refined biodiversity items and issues component for experts appointed under UNEP/GEF project of NBA	NBA	Chennai
22-23 May 09	International Biodiversity Day with Sister departments like AH & VS, WWF, SARAH	Forest officials	Chief Wildlife Warden/ Member-Secy SBB	Forest Conference Hall
10-12 Sep 09	National Biodiversity Authority meeting			Kolkata
22 Feb 10	International Rhododendron Festival (IRF)	IRF	IFR Committee, FEWMD	Forest Conference Hall
10-12 Aug 09	MoEF/NBA on UNDP/GEF project with other 5 states on strengthening implementation of	Biological Diversity Act. 2002 & Rules with focus on ABS	WB Biodiversity Board	Paribesh Bhawan, , Kolkata
18 Jul 09	Discussion on Dog Nuisance - with SARAH Div. officer, Animal Husbandry Dept. and Forest Officials.	Sikkim Anti-Rabies and Animal Health Division		HZP Bulbulay
15 – 17 Jun 09	Presented a paper and Exhibition materials on Biodiversity in Sikkim	Convention on Biological Diversity's International Experts on Trad. Knowledge	Andhra Pradesh Biodiversity Board	AP-SBB Room No. 302, Aranya Bhavan, Saifabad.



13 Jun 09	Discussion meeting Research Priorities in Eastern Himalaya in background of proposed study	Potential impacts of climate and ecosystem services on Eastern Himalaya	National Centre for Biological Sciences	NCBS, Bangalore
13 Oct 09	State Level Workshop on Education Reform-Renewal Mission 2010	Access & Imbalances in Education System	HRDD, GoS.	Chintan Bhawan
23-24 Oct 09	19th Regional Committee Meeting	Regional Committee Meeting of ICAR	ICAR	Tadong
23 Oct 09	Talk to newly appointed Under Secretaries	Biodiversity	SMIT	Majhitar
7 Nov 09	National Seminar (group discussion)	National Seminar on Bio-resource Conservation and Management	Zoology Dept, SGC	SGC
7 Jan 10	Executive Council Meeting of HARC	High Altitude Research Centre for Natural products	High Altitude Research Centre for Natural Products	Tashiling Secretariat
22 Feb 10	Committee members meeting	IRF 2010	FEWMD.	Forest Conference Hall

#### 4. EXTENSION & EDUCATION THROUGH BIODIVERSITY RESEARCH CELL:

Date	Lecture/Talk/Paper/Presentation	Name of Programme	Organized by	Venue
14 Apr 09	Perspective on Eco-tourism and Wildlife and Tourism Management to the students of the University of Puget Sound, Washington, USA Gangtok, total students	Eco-tourism and Wildlife and Tourism Management	Khanchandzonga National Park' Karma Quest Ecotourism and Adventure travel	Hotel Sonam Delek, Gangtok
31 May 09	PPT on Access Benefit Sharing and Traditional Knowledge training Workshop at East Sikkim,	ABS	Society for Better Env.	Singtam
8 June 09	Biodiversity and Eco-tourism in Sikkim	CBD programme	Tholung Ecotourism Co-Op. Society.	
13 June 09	Research Priorities in Eastern Himalaya in background of proposed study on potential impacts of climate and ecosystem services on Eastern Himalaya	Discussion meeting	NCBS Bangalore	National Centre for Biological Sciences
27 Jun 09	Bio-diversity Conservation and rules		TAAS Near Janta Bhawan	TAAS training Institute, ,
28 Jun 09	Biodiversity of Sikkim: Ethics and Values from the Nature	Summer Course on Education vis-à-vis Educare	Sri Satya Sai Seva Organization	Sarva Dharma Kendra, Daramdin
16-17 Jul 09	Wildlife Crime/Wildlife Trafficking & Wildlife Monitoring	Workshop on Himal Rakshak	TMI-Gangtok	Marchak
27 Sep 09	Biodiversity and Conservation Ethics students and Faculty of St. Edmund's College, Shillong during study tour to Sikkim		Namchi govt. College	Forest Conference Hall,
6 Oct 09	Biodiversity and Conservation Ethics to Students of 9 schools of Gangtok (Enchay, TNA, W. Point, Modern, PNG, Deorali Girls, Bahai, Tadong, Holy Cross)		WWF-Sikkim	Hotel Sikkim Retreat PS Road
16 Nov 09	Forest, Wildlife and Biodiversity Conservation in Sikkim	training camp Lidea Consultancy Services	Lidea Consultancy Services (LCS Group)	Amdo Golai, Gangtok
27 Nov 09	Forest and Wildlife Conservation ethics and Women in conservation to the students of St. Edmund College		Dr. M. P. Thapa and Dr. Pankaj Thapa, (St. Edmund College)	Hotel Woodland, Gangtok

10 Feb 10	Biodiversity and its Conservation	Guides and Porters Training	ECOSS.	Lingee Payong
18 Feb 10	Biodiversity and its Conservation	Guides and Porters Training	ECOSS.	Ray Mindu
5 Mar 10	Potential of Natural Fibres in Mountains		Chief Secretary, GoS	Tashiling Secretariat
10 Mar10	Environmental Science – its impact on student society	Guru Gyan of Nayuma Entertainment prog	Nayuma Entertainment TV.	Gangtok
3 Dec 09	Judge/evaluator for NCS C 2009	State Level Children's Science Congress 2009	DST	Marchak,
13 Feb 10	Survey for Migratory Birds & Orchids		FEWMD	Ravangla
15 Mar 10	Open painting competition 'Paint the Change' for schools and colleges	Impact of climate change in Sikkim	WWF- Gangtok.	WWF Office, Deorali
2-8 Oct 09	Radio Talk on WL Week '09 (Endangered species of Sikkim and their Preservation)	CELEBRATING NATURE	AIR	AIR Gangtok
2-8 Oct 09	Article in Media (Now, Sikkim Express)	Celebrating Nature		
2-8 Oct 09	Prepared Message of Chief Wildlife Warden for Media, AIR, etc.	WL WEEK 2009		

**5. FOREST CENTENARY ACTIVITIES (Feb-Dec 2009) & BIODIVERSITY BOARD ACTIVITIES 2009-10**

Mobile Photo Exhibition-SARAMSA
Release of book 'Mushrooms of Sikkim' thro' SBB
Red Panda Stamp by INDIAPOSTS
Mobile Photo Exhibition-LACHUNG
Completion of book 'Ferns & Fern Allies of Sikkim' thro' SBB
HERITAGE TREES declaration during IRF 2010
Biodiversity of Raj Vahaban (Book)
International Rhododendron Festival
List of threatened species of Sikkim (flora, fauna) compiled
Reconstitution of SBB processed
One-Species-Per-Day thro' local media
Heritage Tree search

**FAUNA OF SIKKIM AS PER ZOOLOGICAL SURVEY OF INDIA**

Ref: Fauna of Sikkim: State Fauna Series – 9: Ramakrishna and Alfred Fauna of Sikkim: An Overview:  
(Part : I - V)

**BIRDS of Sikkim:** Over 422 species and subspecies with authentic records and 612 species and subspecies in total likely to occur in the state. (Survey includes collections and observations make by Hodgson (1845-58), Blanford (1870), Frammie (1877, Brooks (1880) Baily, Stevans, Ludlow, Meinertzhagen (1923-37), Salim Ali (1962), ZSI State Survey (1991-1994), West Sikkim – 3 species, north Sikkim – 5 species, south Sikkim 5 species and Sikkim (Without locality details)- 11 species)

No.	Family in India	Species / subspecies	Sikkim	Percentage representation	Remarks
1	Podicipididae	4	1	25	Little Grebe, distributed at lower elevations only
2	Phalacrocoracidae	3	2	66	Indian Shag & Cormorant, distributed at lower elevations of 2000' – 3500'
3	Anhingidae	1	1	100	Darter, distribution as above
4	Ardeidae	23	10	23	Grassland & Marshland species, 50% common remaining rare
5	Ciconiidae	-	4	-	Some resident & some migratory Storks found at low altitudes adjacent to Bengal & Nepal
6	Anatidae	-	7	-	Rare winter visitor, Ducks and Geese normally not found in Sikkim. Lachen valley is the traditional bird flyway for ducks and geese
7	Accipetridae	74	33	44	Bearded vulture is largest and occurs at higher altitudes of Himalaya. Record 13,000' by Blanford & 16,000' by Schafer (1938), many of them are winter visitors.
8	Pandionidae	1	1	100	Osprey, rare and not much known on their distribution except stray occurrence
9	Falconidae	20	9	45	Rare and resident in outskirts of forest and cultivation with tall trees from the foot hills to 2000'
10	Phasianidae	71	13	19	Commonly known as Game birds. Many of them are rare and resident occurring in the open hillside, alpine pastures intermixed with lichen, ferns, grass from 1000-15000'
11	Turnicidae	6	3	50	Grassland species
12	Gruidae	7	1	12.5	Single Pale arctic migratory species of Crane
13	Rallidae	21	8	39	Wetlands along the foothills
14	Otididae		1		Presumed to be present
15	Jacaniidae	2	2	100	Marsh lands
16	Rostratulidae	1	1	100	Painted snipe resident species

17	Charadriidae	21	5	24	Uncommon summer visitors, distributed in marsh lands, river beds up to 1000'
18	Scolopacidae	41	15	38	Most of them are winter visitors, some of them are uncommon summer visitors. Some exhibits altitudinal migration from 9,000' – 15,000'
19	Recurvirostridae	3	2	66	Distributed in a wide spectrum of ecological habitat and exhibits different status
20	Glareolidae	6	1	17	Not much known of the species
21	Pteroclididae	8	1	13	Terrestrial pigeon like bird
22	Collumbidae	45	13	37	Few like Hill pigeon is rare resident (N Sikkim), snow and Speckle wood pigeon rare, distributed from 5,000' – 13,000'
23	Psittacidae	21	7	33	Plum headed parakeet expected to be present, Blossom headed parakeet only sightings, Intermediate parakeets completely unknown
24	Cuculidae	32	19	60	Many of them are rare and uncommon
25	Tytonidae	4	2	50	Moderately common except <i>Phodilus badius</i> which is extremely rare
26	Strigidae	48	17	36	Many of them are common some are rare recorded from 13,000' for ex. <i>Glaucidium castanonotum</i>
27	Podargidae	2	1	50	Extremely rare and resident
28	Caprimulgidae	10	4	40	Stevens recorded at 8,000' Ali (1962) at 9,000, at Lachen
29	Apodidae	21	7	33	Many of them rare, recorded at 13,000', from foothills to higher elevation
30	Trogonidae	6	1	17	Evergreen forest
31	Alcedinidae	28	9	30	Recorded up to 4750' by Stevens
32	Coraciidae	7	2	29	Rare, resident and secondary tropical forest up to 2,000'
33	Upupidae	4	1	25	Uncommon summer visitor
34	Bucerotidae	9	4	45	Sparingly distributed in lower elevations up to 4,500' (Stevens)
35	Capitonidae	14	6	43	Arboreal, uncommon resident in tall evergreen & mixed forests
36	Indicatoridae	3	1	33	Very little known not recorded but skin presumably present in British Museum
37	Picidae	55	19	35	Mostly uncommon, resident in mixed forests. Usually up to 6,000' record of 13,000' by Meinertzhagen (1927)

38	Eurylaimidae	2	2	100	Rare, resident in dense forest
39	Pittidae	5	3	60	Rare, resident in secondary dense forest
40	Alaudidae	34	4	12	Some are rare and uncertain, Blanford (1870) noted several hundreds at Yamthang (Great short toed Lark)
41	Hirundinidae	22	7	36	Rare, uncommon, resident in 1000' – 6,5000'
42	Motacillidae	41	10	22	Usually rare and uncommon, some are sporadic winter visitor, recorded u to 16,500'. 2 subspecies of Oriental Pipit present in different seasons and altitudes
43	Campephagidae	34	9	34	Resident, some are winter visitors recorded from open hill side to 10,000'
44	Pycnonotidae	34	9	27	Common resident, scrub and mixed forests, up to 5,000'
45	Irenidae	13	4	33	Uncommon, resident open hill side
46	Laniidae	14	4	29	Uncommon, resident as well as winter visitor, recorded up to 15,000'
47	Cinclidae		2		Uncommon, resident in high elevation swift mountain torrents
48	Troglodytidae		1		2/3 geographical races present
49	Prunellidae	12	6	50	Rare, resident, recorded at Conifer and Rhododendron forest
50	Turdinae	120	56	48	Wide spectrum in their distribution and status
51	Timalinae	203	64	32	As above
52	Panurinae	16	8	50	Distributed in dense bamboo forests
53	Sylvinae	143	45	33	Many of the are fairly common, resident, occurring at varying altitudes
54	Muscicapinae	45	23	50	Uncommon, rare, some are winter visitors/summer migrants/altitudinal migrants
55	Monarchinae	8	2	25	
56	Rhipidurinae	10	3	30	Uncommon, rare, resident, alpine pastures, Rhododendron forest between 9,000-12,000'
57	Remizidae	3	1	33	Uncommon, recorded up to 4,500'

58	Sittidae	13	5	40	Common, resident climbing, sense evergreen forest up to 12,000'
59	Certhiidae	12	3	25	Uncommon, resident, conifer forests up to 13,500'
60	Dicaeidae	10	6	60	Some are common, some are rare, living at the edge of the forest streams
61	Nectariniidae	26	9	33	Common resident however, Fair-tailed Sunbird is rare, foothills and usually with banana plants
62	Zosteropidae		2		2 geographical races present of a species at the forest edge
63	Emberizinae	19	6	34	Uncommon, some are accident stragglers
64	Fringilidae	50	27	54	Wide spectrum in their distribution and status
65	Passarinae	15	9	60	Records at 16,500' during Mt. Everest Expedition
66	Ploceinae	4	1	25	Common, resident open, grassland
67	Sturnidae	31	6	20	Usually common, however Hill Myna is uncommon
68	Oriolidae	6	4	66	Common, resident, evergreen forest
69	Dicruridae	9	8	89	Mostly common resident, some altitudinal migrant, open forest and cultivation foot hills up to 3,000'f
70	Artamidae	2	1	50	Rare summer visitor, open forest
71	Corvidae	24	12	50	Wide spectrum of occurrence and status, Yellow billed Chow recorded at 18,000'

#### ANIMALS OF SIKKIM

No.	Fauna	No. of Species / sub-species
1	Mammals	92 (Preponderance of (40%) Palearctic species at high altitude, Oriental (50%) and Indo-Chinese elements at lower and medium altitudes. No endemic mammals in Sikkim except Himalayan Tahr, Red panda, Kiang which are endemic to entire stretch of Himalayas.) (Bats: 54 spp. By Shahroukh Mistry 1992)
2	Domestic mammals	Cattle, Goat, Sheep, Mules, Pig
4	Reptiles	Reptilia – 31 species (Authentic records. Several sightings of others known but not included due to non availability of representative collection at ZSI, especially the turtles. Pattern of distribution in east Sikkim – 6 species, West Sikkim – 3 species, north Sikkim – 5 species, south Sikkim 5 species and Sikkim (Without locality details)- 11 species)

110 MAMMALS OF SIKKIM: A REPRESENTATIVE LIST by Usha Lachungpa

FAMILY	SCIENTIFIC NAME	COMMON NAME	
MANIDAE	1. <i>Manis pentadactyla</i>	Chinese pangolin	
TALPIDAE	2. <i>Talpa micrura</i>	Himalayan mole	
SORICIDAE	3. <i>Soriculus nigriscens</i>	Sikkim large-clawed shrew	
	4. <i>Nectogale elegans</i>	Water shrew	
	5. <i>Suncus murinus</i>	House shrew	
	6. <i>Crocidura attenuata</i>	Grey shrew	
	7. <i>Tupaia belangeri</i>	Northern tree shrew	
	PTEROPODIDAE	8. <i>Pteropus giganteus</i>	Indian flying fox
	9. <i>Rousettus leschenaulti</i>	Rousette, Fulvous rousette	
	10. <i>Cyanopterus sphinx</i>	Short-nosed fruit bat	
	11. <i>Sphaerias blanfordi</i>	Blanford's fruit bat	
	12. <i>Eonycteris spelaea</i>	Dawn bat, Cave fruit bat	
	13. <i>Macroglossus sobrinus</i>	Hill long-tongued fruit bat	
	MEGADERMATIDAE	14. <i>Megaderma lyra</i>	Greater false vampire bat
	RHINOLOPHIDAE	15. <i>Rhinolophus trifolius</i>	Trefoil horseshoe bat
16. <i>R. luctus</i>		Woolly horseshoe bat	
HIPPOSIDERIDAE	17. <i>H. cineraceus</i>	Least leaf-nosed bat	
	18. <i>H. armiger</i>	Himalayan leaf-nosed bat	
VESPERTILIONIDAE	19. <i>Myotis sicarius</i>	Mouse-eared bat	
	20. <i>M. formosus</i>	Hodgson's bat	
	21. <i>M. siligorensis</i>	Himalayan whiskered bat	
	22. <i>Plecotes auritus</i>	Brown long-eared bat	
	23. <i>Barbastella leucomelas</i>	Eastern barbastelle	
	24. <i>Nyctalus noctula</i>	Noctule	
	25. <i>Murina leucogaster</i>	Greater tube-nosed bat	
	26. <i>M. cyclotis</i>	Round-eared tube-nosed bat	
	27. <i>Harpiocephalus harpia</i>	Hairy-winged bat	
	CERCOPITHECIDAE	28. <i>Macaca assamensis</i>	Assamese macaque
29. <i>M. mulatta</i>		Rhesus macaque	
30. <i>Semnopithecus entellus</i>		Hanuman langur	
CANIDAE	31. <i>Canis lupus</i>	Wolf, Grey wolf	
	32. <i>C. aureus</i>	Golden jackal	
	33. <i>C. familiaris</i>	Domestic dog	
	34. <i>Vulpus vulpus</i>	Red fox	
	35. <i>V. bengalensis</i>	Bengal fox	
	36. <i>Cuon alpinus</i> GT	Red dog, Indian wild dog	
URSIDAE	37. <i>Ursus thibetanus</i> GT	Asiatic black bear	
	38. <i>U. arctos</i>	Brown bear	
AILURIDAE	39. <i>Ailurus fulgens</i> GT	Red panda, Lesser panda	
MUSTELIDAE	40. <i>M. sibirica</i>	Siberian weasel	
	41. <i>M. stridorsa</i> GT	Back-striped weasel	
	42. <i>Martes foina</i>	Beech marten, stone marten	
	43. <i>M. flavigula</i>	Yellow-throated marten	
	44. <i>Lutra lutra</i> GT	Eurasian otter, European otter	
	45. <i>Lutrogale perspicillata</i> GT	Smooth-coated otter	
	VIVERRIDAE	46. <i>Viverra zibetha</i>	Large Indian civet
47. <i>Viverricula indica</i>		Small Indian civet	
48. <i>Prionodon pardicolor</i>		Spotted linsang	

	49. <i>Paradoxurus hermaphroditus</i>	Common palm civet
	50. <i>Paguma larvata</i>	Masked palm civet
	51. <i>Arctictis binturong</i>	Binturong
HERPESTIDAE	52. <i>Herpestes javanicus</i>	Small (Indian) Asian mongoose
	53. <i>H. edwardsii</i>	Indian grey mongoose
	54. <i>H. urva</i>	Crab-eating mongoose
FELIDAE	55. <i>Felis catus</i>	Domestic cat
	56. <i>F. chaus</i>	Jungle cat
	57. <i>Lynx lynx</i>	Eurasian lynx
	58. <i>Prionailurus bengalensis</i>	Leopard cat
	59. <i>P. viverrinus</i>	Fishing cat
	60. <i>Catopuma temminckii</i>	Golden cat
	61. <i>Pardofelis marmorata</i>	Marbled cat
	62. <i>P. (Neofelis) nebulosa</i> <b>GT</b>	Clouded leopard
	63. <i>Panthera pardus</i>	Leopard, Panther
	64. <i>P. tigris</i>	Tiger
	65. <i>P. uncia</i> <b>GT</b>	<b>Snow leopard</b>
EQUIDAE	66. <i>Equus kiang</i>	Tibetan wild ass
SUIDAE	67. <i>Sus scrofa</i>	Wild boar
MOSCHIDAE	68. <i>Moschus chrysogaster</i>	Musk deer, Himalayan Musk Deer
CERVIDAE	69. <i>Muntiacus muntjac</i>	Indian muntjac, Barking deer
BOVIDAE	70. <i>Bos gaurus</i>	Gaur, Indian Bison
	71. <i>Bos grunniens</i>	Yak
	72. <i>Bubalus bubalis</i>	Domestic water buffalo
	73. <i>Budorcas taxicolor</i>	Takin
	74. <i>Procapra picticaudata</i>	Tibetan gazelle
	75. <i>Naemorhedus goral</i>	Himalayan goral, Common Goral
	76. <i>N. sumatraensis</i>	Southern serow, Mainland serow
	77. <i>Hemitragus jemlahicus</i>	Himalayan tahr
	78. <i>Ovis ammon</i> <b>GT</b>	Nayan, Great Tibetan sheep, Argali
	79. <i>Pseudois nayaur</i>	Bharal, Blue sheep
SCUIRIDAE	80. <i>Ratufa bicolor</i>	Black giant squirrel
	81. <i>Callosciurus erythraeus</i>	Pallas's squirrel
	82. <i>C. pygerythrus</i>	Hoary-bellied squirrel
	83. <i>Tamiops mccllellandii</i>	Himalayan striped squirrel
	84. <i>Dremomys lokriah</i>	Orange-bellied Himalayan squirrel
PTEROMYIDAE	85. <i>Petaurista petaurista</i>	Red flying squirrel
	86. <i>P. caniceps</i>	Grey-headed flying squirrel
	87. <i>P. magnificus</i>	Hodgson's flying squirrel
	88. <i>P. nobilis</i>	Gray's giant flying squirrel
	89. <i>P. elegans</i>	Spotted giant flying squirrel
	90. <i>Eupetaurus cinereus</i>	Woolly flying squirrel
	91. <i>Hylopetes alboniger</i>	Particolored flying squirrel
MURIDAE	92. <i>Mus musculus</i>	Common house mouse
	93. <i>M. pahari</i>	Sikkim mouse
	94. <i>Vandeleuria oleracea</i>	Indian long-tailed tree mouse
	95. <i>Rattus rattus</i>	Roof rat, House rat, Ship rat
	96. <i>R. nitidus</i>	Himalayan rat
	97. <i>Bandicota indica</i>	<i>Large bandicoot-rat</i>
	98. <i>B. bengalensis</i>	
	99. <i>Niniventer niniventer</i>	White-bellied rat



	100. <i>N. eha</i>	Smoke-bellied rat
	101. <i>Alticola roylei</i>	Roylei's vole
	102. <i>Pitymys sikkimensis</i>	Field vole, Sikkim vole
	103. <i>P. leucurus</i>	Field vole
	104. <i>Marmota bobak</i>	Himalayan marmot
	105. <i>Ochotona sikkimensis</i>	Pika, Mouse-Hare
	106. <i>Ochotona roylei</i>	Pika, Roylei's Pika, Mouse-Hare
	107. <i>Ochotona thibetana</i>	Plateau mouse-hare
HYSTRICIDAE	108. <i>Hystrix brachyura</i>	'Himalayan crestless porcupine'
LEPORIDAE	109. <i>Lepus nigricollis</i>	Indian hare
	110. <i>L. oiostolus</i>	Woolly hare

#### REPTILES OF SIKKIM by Ajeya Jha

Sl. No	Order	Family	English Name	Scientific Name
1	Testudinea		East Asian Tortoise	<i>Indotestudo elongata</i>
2	Squamata	Gekkonidae(Gecko)	Yellow-bellied House Gecko	<i>Hemidactylus flaviviridis</i>
3		Gekkonidae(Gecko)	Gray's House Gecko	<i>Hemidactylus bowringii</i>
4				<i>Hemidactylus garnotii</i>
5			Frilled House Gecko	<i>Cosymbotus platyurus</i>
6		Agamidae	Blood Sucker	<i>Calotes versicolor</i>
7			Eastern Blood Sucker or Jerdon's Blood sucker	<i>Calotes jerdoni</i>
8			Blyth's Japalura	<i>Japalura tricarinata</i>
9			Gray's Japalura	<i>Japalura variegata</i>
10			Flying Lizards	<i>Draco blanfordii</i>
11			Himalayan Agama	<i>Loudakia himalayana</i>
12			Toad-Agama	<i>Phrynocephalus theobaldi</i>
13		Scincidae (Skinks)	Gray's Skink	<i>Sphenomorphus indicus</i>
14				<i>Sphenomorphus maculatum</i>
15			Common Skink	<i>Mabuya carinata</i>
16			Sikkim Skink	<i>Leiopisma sikkimense</i>
17		Anguidae (Glass lizards)	Burmese Glass Snake	<i>Ophisaurus gracilis</i>
18		Varanidae (monitors)	Common Indian Monitor	<i>Varanus bengalensis</i>
19	Serpentes	Typhlopidae (Blind Snakes)	Wall's Blind Snake	<i>Typhlops oligolepis</i>
20			Jerdon's Blind Snake	<i>Typhlops jerdoni</i>
21			Common Blind Snake or Brahminy Blind Snake	<i>Ramphotyphlops braminus</i>
22		Boidae (Boas and Pythons)	Indian Python or Rock Python	<i>Python molurus bivittatus</i>
23			Russel's Earth Boa	<i>Eryx conicus</i>
24		Colubridae Trinket Snakes	Green Trinket Snake or Green Tree Racer	<i>Elaphe prasina</i>
25			Copperhead or Copperheaded Trinket Snake	<i>Elaphe radiata</i>
26			Himalayan Trinket Snake	<i>Elaphe hodgsoni</i>
27			Darjeeling Trinket Snake or Ring-tailed Trinket Snake	<i>Elaphecantoris</i>
28			Black-striped Trinket Snake	<i>Elaphe porphyracea</i>
29			Striped Trinket Snake or Striped Racer	<i>Elaphe taeniura</i>
30			Assam Snail-eater	<i>Pareas montocola</i>
31			Darjeeling Snail-eater	<i>Pareas macularius</i>
32			Rat Snake, Oriental Rat Snake or Dhaman	<i>Ptyas mucosus</i>
33			Indiochinese Rat Snake	<i>Ptyas korros</i>
34			Green Rat Snake	<i>Zaocys nigromarginatus</i>

35			Banded Racer (Racers)	<i>Argyrogena fasciolata</i>
36			Stoliczka's Striped-neck Snake	<i>Liopeltis stoliczkae</i>
37			Himalayan Striped-neck Snake	<i>Liopeltis rappi</i>
38			White-striped Kukri Snake or Ladder Back Kukri Snake or Light-barred Kukri Snake (Kukri Snakes)	<i>Oligodon alboninctus</i>
39			Red-bellied Kukri Snake	<i>Oligodon erythrogaster</i>
40			Black Kukri Snake	<i>Oligodon melaneus</i>
41			Darjeeling Kukti Snake or Large-spotted Kukti Snake	<i>Oligodon juglandifer</i>
42			Painted Bronze-back ( Bronze-backs)	<i>Dendrelaphis pictus</i>
43			Green bronze-back	<i>Dendrelaphis cyanochloris</i>
44			Himalayan bronze-back or gore's Bronze-back	<i>Dendrelaphis gorei</i>
45			Golden Tree Snake or Ornate 'Flying' Snake	<i>Chrysopelea ornata</i>
46			Sikkim False Wolf Snake	<i>Dinodon gammiei</i>
47			Gunther's False Wolf Snake	<i>Dinodon serpentionalis</i>
48			Checkered Keelback (Water Snakes (Keelbacks))	<i>Xenochrophis piscator</i>
49			Boulenger Keelback	<i>Amphiesma parallela</i>
50			Mountain Keelback	<i>Amphiesma platyceps</i>
51			Red-necked Keelback	<i>Rhabdophis subminiata</i>
52			Himalayan Keelback	<i>Rhabdophis himalayana</i>
53			Darjeeling False Cobra	<i>Pseudoxendon macrops</i>
54			Darjeeling Oriental Worm Snake or Black-bellied Roughside	<i>Trachischium fuscum</i>
55			Gunther's Oriental Worm Snake	<i>Trachischium guentheri</i>
56			Orange-bellied Oriental Worm Snake	<i>Trachischium tenuiceps</i>
57			Common Cat Snake or Indian Gamma (Cat Snakes	<i>Boiga trigonata</i>
58			Tawny Cat Snake	<i>Boiga ochracea</i>
59			Eastern Gamma or Eastern Cat Snake	<i>Boiga gokool</i>
60			Green Cat Snake	<i>Boiga cyanea</i>
61			Himalayan Cat Snake	<i>Boiga multifasciata</i>
62			Bengal Cat Snake	<i>Boiga ocellata</i>
63			Forsten's Cat Snake	<i>Boiga forsteni</i>
64			Mock Viper	<i>Psammodynastes pulverulentus</i>
65			Green Whip Snake	<i>Ahaetulla prasina</i>
67		Elapidae (Cobras, Kraits and Coral Snakes	King Cobra	<i>Ophiophagus hannah</i>
68			Himalayan Krait	<i>Bungarus bungaroides</i>
69			Black Krait	<i>Bungarus caeruleus</i>
70			Maclelland's Coral Snakes	<i>Hemibungarus maclellandi</i>
71		Viperidae (Vipers)	Russel's Viper	<i>Vipera russelli</i>
72			Himalayan Pit Viper	<i>Gloydius himalayanus</i>
73			Bamboo Pit Viper	<i>Trimeresurus gramineus</i>
74			Blotched Pit Viper	<i>Ovophis monticola</i>
75			Jerdon's Pit Viper	<i>Protobothrops jerdonii</i>
76			Pope's Green Pit Viper	<i>Trimeresurus popeorum</i>
77			Stejnegeri Pit Viper	<i>Trimeresurus stejnegeri</i>
78			Spot-tailed Pit Viper	<i>Trimeresurus erythrurus</i>

## Chapter-27.

### Schemes under Land Use & Environment Circle

#### Catchment Area Treatment (CAT) Plan

One of the hydroelectric projects Teesta Stage Five-510 MW was initiated by NHPC during the year 1999-2000, Since then simultaneously CAT plan was drawn up and implemented right from 2000-2001 and still some of the maintenance works is being implemented. The Four major sectors of the department are involved for executing the CAT Plan i.e. Territorial, Land Use & Environment, Social Forestry and Wildlife carried out the treatment works.

The period for implementation started from 2001-01 to 2010-11. The details are listed below:-

*(In lakhs)*

Sl. No.	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	Total
<b>Fin</b>	67.12	296.07	475.16	399.48	644.16	726.15	332.66	722.39	186.97	15.48	7.74	<b>3680.4</b>

#### SIKKIM ECOLOGY FUND AND ENVIRONMENT CESS ACT 2008.

This Act was enacted in the state wide notification number 183 of 28<sup>th</sup> April 2005 by the state Government and the rules were made vide notification number 93 dated 2<sup>nd</sup> April 2007. In accordance to this rule the department has been enacting various activities for conservation and restoration of ecology in the state. Till date the department has spent following amount for the CESS work.

*(In lakhs)*

Sl.No.	Name of the District	2008-09	2009-10	Total
1	South District	21.50	14.00	35.50
2	North District	23.00	10.88	33.88
3	West District	29.00	25.00	54.00
4	East District	16.26	29.83	46.09
	<b>Total</b>	<b>89.76</b>	<b>79.71</b>	<b>169.47</b>

The activities done were:-

1. Dry Stone Rubble Masonry Walls were erected in various location of the districts which were prone to landslides, and also reached out to the degraded areas.
2. Efforts were made to restore the distinct species like *Rhododendron* in Gurase dara in West Sikkim.
3. Awareness Programme for the waste Management and distribution of eco-friendly Gunny bags for proper disposal of waste to tourist and local vehicles.
4. Even the degraded areas were treated by carrying out plantation with hardy and ornamental plants.
5. The funding was also made for the ancillary work in the Zoological Park in East Sikkim.

### **12<sup>th</sup> Finance Commission**

The Circle has also been entrusted with the job of implementing activities notified in XIIth Finance Commission. The achievement in this scheme is under :( in lakhs)

Sl.No	Year	East	West	North	South	Total
1	2006-07	12.95	--	5.38	--	<b>18.33</b>
2	2007-08	6.99	--	--	0.37	<b>7.36</b>
3	2008-09	18.51	1.91	11.25	0.99	<b>32.66</b>
4	2009-10	21.64	24.53	28.20	20.66	<b>95.03</b>
5	<b>Total</b>	<b>60.09</b>	<b>26.44</b>	<b>44.83</b>	<b>22.02</b>	<b>153.38</b>

### **Wetland Conservation in Sikkim**

The Himalayan State of Sikkim shelves a large number of fresh water lakes of varied sizes and dimension specially located in high elevated areas. These fresh water wetlands have been the main source of Teesta River in North Sikkim and Rangit River in West Sikkim. They are the perennial water supply to various tributaries of the river system and also serve as a halting station for long distance migratory ducks. Some of these wetlands are glacier fed and others are snow fed.

Few of the wetlands have shown adverse reaction to the effects of global warming. There is a drastic decrease of water level and subsequent degradation of catchment area. The conservation of these wetlands is very important to sustain the aquatic eco-system and water supply.

Considering the imperative role of these wetlands, the experts of Ministry of Environment & Forests, Government of India, Wetland Division Dr. S. Kaul, Director, was invited to the State during 2006 and selected largely degraded wetlands due to anthropogenic factors for appropriate management & conservation strategies. The programme was followed up by visit of Senior Scientist in the subsequent year too. The selections of the wetlands were based on a cluster of small fresh water lakes forming into a complex of wetland in order to match the standard of wetland as per the Ramsar Convention.

As follow up, the guidelines of Government of India, State Level Steering Committee under the Chairmanship of Chief Secretary was constituted to oversee and review the wetland conservation activity in the State. Around 115 such wetland were indexed and six wetlands were included in the National Wetland Conservation Programme of Ministry of Environment & Forests, Government of India. Out of these six wetlands, four wetlands have received financial assistance for management and conservation practices since 2008-09.

Out of these 6 wetland 4 wetlands viz. Gurudongmar, Phedang, Tsomgo and Khecheopalri is being provided the pilot grant. Till now the fund received in the district are listed below:-

Sl.No.	Name of the District	2008-09	2009-10	Total
1	South District	--	--	--
2	North District	12.61	15.00	27.61
3	West District	10.82	49.01	59.83
4	East District	15.00	16.60	31.60
	<b>Total</b>	<b>38.43</b>	<b>80.61</b>	<b>119.04</b>

### **Technology Development Extension & Training (TDET) Programme**

Technology Development, Extension & Training (TDET) is a central scheme of Department of Land Resources (DoLR), National Wasteland Development Board (NWDB), Ministry of Rural Development (MoRD), Government of India.

The implementation of this project was done in the entire district in the state by Land Use & Environment Circle of the Forest Environment & Wildlife Management Department. This project was implemented in the state keeping in mind the Treatment of Landslide and Soil Erosion in Watershed of the Catchments area.

Sikkim, a small mountainous state in the eastern Himalayas covers an area of 7069 sq. km., extending approximately 114 km from north to south and 64 km east to west. It is hilly state consisting of tangled series of interlocking mountain chains rising range above range from the south to the foot of high peaks which marks the snow line in the north. The topography is such that it has earned itself a characteristic feature and the unavoidable natural disaster of all, the landslide. Landslide has thus been a part of this state since its formation.

Landslide the major natural disaster in the region and its occurrence leads to a lot of soil erosion thus depriving the region of its rich soil. Keeping mind the retention of the soil and treatment of Slides; The Ministry of Rural Development Department of Land Resources Government of India had granted fund for the project for Treatment of Landslide and Erosion Control in the identified area of the three Districts vice North/South and West in the following years.

The objectives of the financial assistance is for the purpose of

- Technology development
- Pilot project
- Field trial of established technologies on farmer fields/village commons/other institutional lands.
- Extension and training

Listed below is the statement showing the Fund allotted and spent for the Scheme:-

Sl. No	District	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	Total
1	West	94.00	56.15	42.00	77.60				<b>258.15</b>
2	North				126.00	248.00	105.00	Nil	<b>479.00</b>
3	South		99.956	172.84	147.88	63.15	-	-	<b>483.826</b>

## **Chapter-28.**

### **Watershed Management programme in Sikkim**

The concept of watershed development programme envisaged to make every village self sufficient in water as it is the vital component of livelihood, through the organized effort of the villagers themselves. It aims at the multi-pattern system of vegetation to maintain the quality and requires lesser external inputs. The producer gets unpolluted nutritious fresh food and uncontaminated water. It will help to uplift socio-economic condition of the poor villagers with sound health. In the course of implementation of the programme it requires to bring convergence with the other practices of the cropping pattern to combat with the ecology and climatic change which has shown its adverse effect in the recent past. Models of self sufficiency will be inducing enthusiasm in local creativity. When Gandhi asked Laurie Baker to build houses for the rural folks with local materials available within 5 km range, he could developed such a beautiful model of design and construction technology that even the urbanized rich people opted that model. Similarly, such concept be created to penetrate further to the other basic elements of livelihood like food and shelter vis-à-vis ecology and environment sustenance. Thus the watershed management programme covers the entire ambit of rural life and presents a better model life of poor villagers.

All schemes of IWDP sanctioned prior to 1999 have now been saturated. During the last decade 25 projects have been sanctioned and are being implemented in different stages of its progress covering four districts of the state with sanction out lay of Rs 7795.75 lakhs out of which Rs 3203.99 has been received so far.

Further, three projects under IWMP has been sanctioned by the Government of India, Ministry of rural Development with an outlay of Rs 2100.00 Lakhs in the year 2009-2010 under the IWMP Programme with a Physical target of 14000 Ha, and released Rs. 117.45 lakhs as first installments of Central Share.

Furthermore, for the future plan, three projects of IWMP have been submitted to the Ministry for the year 2010-2011 which is under process for approval and sanction. These projects cover a physical target of 14039 ha with a financial outlay of Rs 2105.85 lakhs. These schemes bears css:ss in the ratio of 90:10.

Government of India has approved the prospective plan of IWMP projects submitted by us for treatment of 166 Micro-watershed covering an area of 1.63 lakh hectare covering all four districts which are not covered so far. The prospective plan has been prepared using GIS and remote sensing technology. The prospective plan covers the outlay upto 14<sup>th</sup> plan period.

## Chapter-29.

### **Ecology & Environment:**

#### STATE POLLUTION CONTROL BOARD (SPCB)

The Sikkim State Pollution Control Board was initially set up to implement the provisions of the Water (prevention & Control of Pollution) Acts, 1974 and since its inception the Board has tried to ensure proper implementation of the status, judicial and legislative pronouncement and to meet the public demands.

#### **At present the state Pollution Control Board, Sikkim is implementing the following environmental acts & Rules:-**

1. The Water (Prevention & Control of Pollution) Act, 1974;
2. The Water (Prevention & Control of Pollution) Act, 1977;
3. The Air (Prevention & Control of Pollution) Act, 1981;
4. The Public Liability Insurance Act, 1981;
5. The Environment (Protection) Act, 1986;
6. The Hazardous Waste (Management & Handling) Rules, 1989;
7. The Manufacture, Storage and Import of hazardous Chemicals Rules 1989;
8. The Bio- Medical Waste (Management & Handling) Rules, 1989;
9. The Recycled Plastics Manufacture & Usage rules, 1999;
10. The Municipal Solid Waste (Management & Handling) Rules, 2000;
11. The Noise Pollution (Regulation & Control) Rules. 2000;
12. The Batteries (Management & Handling) Rules. 2001;
13. The Ozone depleting substances (Regulation & Control) Rules, 2001

#### **THE AIMS AND OBJECTIVES OF STATE POLLUTION CONTROL BOARD, SIKKIM**

As defined by the Water (Prevention & Control of Pollution) Act, 1974 the State Pollution Control Board are to perform the following functions;

- a) To plan a comprehensive programme for the prevention, control or abatement of pollution or streams and wells in the state and secure the executive thereof;
- b) To advice the State government on any matter concerning the prevention, control or abatement of water pollution;
- c) To collect and disseminate information relative to water pollution and prevention, control or abatement thereof;
- d) To encourage, conduct and participate in investigations and research relating to problems of water pollution and prevention, control or abatement of water pollution;
- e) To collaborate with the Central Board in organizing the training of persons engaged or to be engaged in programmes relating to prevention, control or abatement of water pollution and to organize mass education programmes relating thereto;

- f) To inspect sewage of trade effluents, Works and plants for the treatment of sewage and trade effluents;
- g) To evolve methods or utilization of sewage and suitable trade effluents in agriculture;
- h) To evolve efficient methods or disposal of sewage and trade effluents of land:
- i) To lay down standards of treatment of sewage and trade effluents to be discharged into particular streams

**NAMES OF SCHEMES/PROJECTS COMPLETED BY STATE POLLUTION CONTROL BOARD SIKKIM, SINCE 1994 TO 2010**

<b>S. No</b>	<b>Name of Schemes</b>
1	Establishment of Pollution awareness and assistance centre.
2	Study of the hot water spring of Sikkim
3	Study of water quality of 3 revered lakes of east Sikkim
4	Environment Assessment of Urban Settlement.
5	Assessment of Pollution and Formulation of action plan.
6	Strengthening of SPCS for implementation of rules other than Water & Air Acts
7	Establishment of 2nos. of Ambient Air Quality Monitoring Stations at Gangtok.
8	Strengthening of SPCS, Sikkim up gradation of laboratories
9	Public Hearing on 510 MW, Teesta HE Project
10	Public Hearing on 36 MW, Rolep Hydro-electric Power Project, East Sikkim
11	Public Hearing on Municipal Solid Waste Treatment Plant, Lower Martam, East Sikkim
12	Abatement of Pollution through cleaning of jhoras in and around Gangtok
13	Public Hearing on construction of Airport at Pakyong, East Sikkim
14	Mass Environment Awareness Campaign.
15	Bio -monitoring of river Rani, Teesta & Khacheapalri lake in the state of Sikkim
16	Environmental quality status of Pollution in Sikkim
17	National Air Quality Monitoring Programme (NAMP)
18	Monitoring of Indian National Aquatic Resources (MINARS)
19	Environmental Assessment of Rangit Hydro-Power Project
20	National Air Quality Monitoring Programme (NAMP)
21	Monitoring of Indian National Aquatic Resource (MINARS)



**PUBLIC HEARING CONDUCTED BY STATE POLLUTION CONTROL BOARD-  
SIKKIM AND THE STATUS OF ENVIRONMENTAL CLEARANCE OF THE  
PROPOSED HYDRO-ELECTRIC PROJECTS.**

Sl. No.	Name of the Hydro-electric project	Name of the Developer	Generation Capacity (MW)	Documents submitted	Public hearing conducted on	Status of Environmental Clearance
1.	<b>Teesta</b> hydro electric project. Stage-V, East.	National Hydro-electric Power Corporation (NHPC)	510 MW	DPR, Executive Summary, EIA & EMP	02/12/1997	Environmental clearance granted by MoEF vide letter no. J-12011/1/98-1A-1 dated: 19/05/1999
2.	<b>Rolep</b> Hydro electric project. East.	Amalgamated Trans Power India Ltd. (ATPIL)	36 MW	DPR, Executive Summary, EIA & EMP	22/07/2003	Environmental clearance granted by MoEF vide letter no. J-12011/31/2003 IA-1. dated: 25/02/2004
3.	<b>Chujachen</b> Hydro electric project. East.	GATI Infrastructure Ltd.	99 MW	DPR, Executive Summary, EIA & EMP	30/09/2004	Environmental clearance granted by MoEF vide letter no. J-12011/12/2005 IA-1. dated: 09/09/2005
4.	<b>Sada-Mangder</b> Hydro electric project. East	GATI Infrastructure Ltd.	71 MW	DPR, Executive Summary, EIA & EMP	16/10/2004	Environmental clearance granted by MoEF vide letter no. J-12011/26/2007 IA-1. dated: 25/02/2004
5.	<b>Jorethang</b> Hydro electric project. South.	DANS Energy Pvt. Ltd.	96 MW	DPR, Executive Summary, EIA & EMP	09/04/2006	Environmental clearance granted by MoEF vide letter no. J-12011/19-/2006 IA-1. dated: 26/07/2006
6.	<b>Teesta</b> Hydro electric project. Stage-III, Chungthang, North.	Teesta Urja Pvt. Ltd.	1200 MW	DPR, Executive Summary, EIA & EMP	08/06/2006	Environmental clearance granted by MoEF vide letter no. J-12011/26/2006 IA-1. dated: 04/08/2006
7.	<b>Teesta</b> Hydro electric project. Stage-VI. Mamring. East	LANCO Energy Pvt. Ltd.	500 MW	DPR, Executive Summary, EIA & EMP	21/06/2006	Environmental clearance granted by MoEF vide letter no. J-12011/55/2006 IA-1. dated: 21/09/2006
8.	<b>PANAN</b> Hydro electric project. North.	HIMAGIRI Hydro energy Pvt. Ltd.	300 MW	DPR, Executive Summary, EIA & EMP	18/09/2006	Environmental clearance granted by MoEF vide letter no. J-12011/56/2006 IA-1. dated: 02/01/2007

9.	<b>Rongni chu</b> Hydro electric project. East	Madhya Bharat Power Corporation Ltd.	96 MW	DPR, Executive Summary, EIA & EMP	28/10/2006	Environmental clearance granted by MoEF vide letter no. J-12011/56/2006 IA-1. dated: 04/04/2007
10.	<b>Rangit</b> Hydro electric project. Stage-IV, Reshi, West.	JAL Power Corporation Ltd.	120 MW	DPR, Executive Summary, EIA & EMP	15/12/2006	Environmental clearance granted by MoEF vide letter no. J-12011/11/2007 IA-1. dated: 16/05/2007
11.	<b>Bhasmey</b> Hydro electric project. East.	GATI Infrastructure Ltd.	51 MW	DPR, Executive Summary, EIA & EMP	15/03/2007	Environmental clearance granted by MoEF vide letter no. J-12011/04/2006 IA-1. dated: 15/05/2007
12.	<b>Rammam</b> Hydro electric project. West.	National Thermal Power corporation Hydro Ltd. (NHL)	120 MW	DPR, Executive Summary, EIA & EMP	04/05/2007	Environmental clearance granted by MoEF vide letter no. J-12011/42/2007 IA-1. dated: 17/08/2007
13.	<b>Dikchu</b> Hydro electric project. North & East.	SNEHA Kinetic Power Project Ltd.	96 MW	DPR, Executive Summary, EIA & EMP	16/11/07 & 19/11/2007	Environmental clearance granted by MoEF vide letter no. J-12011/91/2007 IA-1. dated: 01/04/2008
14.	<b>Rangit</b> Hydro electric project. Stage-II. West.	Sikkim Hydro Power Ventures Ltd.	66 MW	DPR, Executive Summary, EIA & EMP	21/09/2008	Environmental Clearance awaited by MoEF.
15.	<b>Tashiding</b> Hydro electric project. West.	Shiga Energy Pvt. Ltd.	97 MW	EIA, EMP & Executive Summary	18/06/2009	Environmental Clearance awaited by MoEF.
16.	<b>Ting Ting</b> Hydro electric project. West.	T.T. Energy Pvt. Ltd.	99 MW	EIA, EMP & Executive Summary	15/09/2010	Environmental Clearance awaited by MoEF.
17.	<b>Lethang</b> Hydro electric project. West.	KHC Lethang Hydro Project Private Limited	96 MW	EIA, EMP & Executive Summary	16/09/2010	Environmental Clearance awaited by MoEF.

## Chapter-30

### Sericulture:

Under the administrative umbrella of Forests, Environment & Wildlife Management Department, the Directorate of Sericulture exists with its own functionaries trained up with specific working skills to deal with various Sericultural activities defined under the its jurisdiction. The specific function of the Directorate is to deal with the various Sericulture developmental activities in the State and some of the schemes rare being sponsored by the Central Silk Board, Government of India termed “Catalytic Development Programme” (CDP). In fact, the over all activities being carried out by the Directorate at present could be categorized under three broad heads; such as (i) Extension Programme (ii) Silkworm Rearing Programme and (iii) Training, Motivation and Capacity Building Programme.

#### Achievement under Extension Programme:

Sl. No.	Name of Scheme	Earmarked Targets: (in acre)			Achievement of Targets:(in acre)			Remarks
		Mul	Eri	Muga	Mul	Eri	Muga	
1	Augmentation of Silkworm food plants	20	51	10	20	51	20	100%
2	Maintenance of Silkworm food plants	20	51	10	20	51	20	100%
3	Sericulture farmers trained	20	51	10	20	51	20	100%
4	Provision of start up tools	20	51	10	20	51	20	100%
5	Construction of Silkworm rearing house	20	06	-	-	-	-	On progress
6	Provision of Drip irrigation facility	03	-	-	-	-	-	100%
	Total -	103	210	40	80	104	40	

#### Achievement under Silkworm rearing Programme:

Sl. No.	Name of Scheme	Earmarked Targets:(in acre)			Achievement of Targets: (in acre)		
		Mul (in kg)	Eri (in kg)	Muga (in no.)	Mul (in kg)	Eri (in kg)	Muga (in no.)
1	Govt.Sericulture Farm, Rorathang	360	299	15000	140	-	-
2	Seri village in East District	560	1313	12000	268	140	-
3	Govt.Seri.Farm, Mamring	480	200	18000	118	84	1012
4	Seri.village in South District	1300	1759	21000	20	77	7458
5	Govt.Seri.Centre Nagdhara	60	100	-	06	07	1979
6	Seri.village in West District	1840	1000	18000	03	08	3664
	Total-	4848	4563	84000	546	316	14113

**SERICULTURE YEARWISE AREA AND PRODUCTION:**

Year	Area taken up for Sericulture Dev. (area in acre)			Management of existing Farms & Nurseries(Ha)			Production of cocoons(Kg)			Revenue realize by sale of cocoons (Rs.in thousand)		
	Mul	Eri	Muga	Mul	Eri	Muga	Mul	Eri	Muga	Mul	Eri	Muga
2001-02	54	-	-	16	-	-	750	-	-	65730	-	
2002-03	21	-	-	16	.5	.5	1278	-	-	55116	-	
2003-04	53	30	-	16	.5	.5	985	-	-	46784	-	
2004-05	21	26	14	16	.5	.5	1765	238	11106	49118	9359	3915
2005-06	30	55	27	16	.5	.5	1604	231	16985	32804	12118	6794
2006-07	10	60	20	16	.5	.5	943	309	12188	30757	24628	5181
2007-08	30	NIL	NIL	16	1.5	1.5	658 Kg. 864 grm.	150 Kg 194 grm.	4294	42781	13775	1803
2008-09	25	4.5	8.5	15	4.5	8.5	565.5	190 kg	4688	0.42	0.04	0.08
2009-10	25	4.5	8.5	15	4.5	8.5	555.60	58800	14113	0.51	0.16	0.04

NB: Production of Eri cocoons considered shall weight in kg.and Muga cocoons in number.

## Chapter -31

### Assessments of Domestic Product of NTFP & Medicinal Plants Herbs

Medicinal Plants & Herbs (Approximate quantity in kg)	2004-2005					Remarks
	North	East	South	West	Total	
Aconitum heterophyllum(Nilo Bikh)	50	5	-	10	65	Commercial
Aconitum ferox(Bikh Atees)	200	-	-	50	250	Commercial
Picrorhiza Kurooa (Kutki)	50	5	-	5	60	Local/Commercial
Nardostachys jatamansi(Jatamansi)	50	10	-	15	75	Local Use
Orchis latifolia (Panchamley)	5	2	-	5	12	Local Use
Podopyllum hexandrum(Ban Kakri)	10	5	-	3	18	- do -
Rheum emodi (Padamchal)	30	50	-	30	110	- do -
Hippophae salicifolia (Achuk)	30	-	-	-	30	- do -
Rhododendron anthopogan(Sunpati)	50	30	-	20	100	- do -
Juniper species (Dhup)	100	20	-	30	150	- do -
Swertia chiraita (Chirata)	30	50	300	500	880	Commercial
Rubi cordifolia (Majito)	100	25	40	50	215	Local Use
Acorus Calamus (Bojho)	50	15	10	20	95	- do -
Aloe barbadensis(Ghewkumari)	-	10	20	10	40	- do -
Orozylum indicum(Totola)	10	15	20	20	65	- do -
Terminalia bellirica (Barra)	-	10	15	15	40	- do -
Terminalia chebula(Harra)	-	10	12	15	37	- do -
Embllica officinalis (Amla)	-	15	50	20	85	- do -
Gloriosa superba (Kalihari)	-	10	60	10	80	Commercial
Stevia (Sweet plant)	-	-	-	-	-	- do -
Asparagus recemosus(Stavari)	-	-	-	-	-	- do -
<b>NTFP Product</b> (Approximate quantity in kg)						
Sishnu	200	250	150	200	800	Local Use
Ningro	200	250	260	280	990	- do -
Mushroom	50	150	120	200	520	- do -
Nakima	30	150	100	130	410	- do -
Thotney	35	100	20	100	255	- do -
Bamboo Shoot	30	500	300	500	1330	- do -
Cane Shoot	30	200	250	250	730	- do -
Chimphing	2	50	60	80	192	- do -

Medicinal Plants & Herbs (Approximate quantity in kg)	2005-2006					Remarks
	North	East	South	West	Total	
Aconitum heterophyllum(Nilo Bikh)	60	15	-	25	100	Commercial
Aconitum ferox(Bikh Atees)	220	-	-	60	280	Commercial
Picrorhiza Kurooa (Kutki)	60	15	-	20	95	Local/Commercial
Nardostachys jatamansi(Jatamansi)	70	20	-	25	115	Local Use
Orchis latifolia (Panchamley)	15	12	-	15	42	Local Use
Podopyllum hexandrum(Ban Kakri)	20	15	-	15	50	- do -
Rheum emodi (Padamchal)	40	60	-	50	150	- do -
Hippophae salicifolia (Achuk)	40	-	-	-	40	- do -
Rhododendron anthopogan(Sunpati)	60	40	-	30	130	- do -
Juniper species (Dhup)	110	30	-	40	180	- do -
Swertia chiraita (Chirata)	40	60	330	600	1030	Commercial
Rubi cordifolia (Majito)	150	40	55	65	310	Local Use
Acorus Calamus (Bojho)	70	25	25	35	155	- do -
Aloe barbadensis(Ghewkumari)	-	15	25	15	55	- do -
Orozylum indicum(Totola)	25	25	25	25	100	- do -
Terminalia bellirica (Barra)	-	15	25	25	65	- do -
Terminalia chebula(Harra)	-	30	25	25	80	- do -
Emblica officinalis (Amla)	-	25	65	35	125	- do -
Gloriosa superba (Kalihari)	-	30	80	30	140	Commercial
Stevia (Sweet plant)	-	-	-	-	-	- do -
Asparagus recemosus(Stavari)	-	-	-	-	-	- do -
NTFP Product (Approximate quantity in kg)						
Sishnu	220	260	160	220	860	Local Use
Ningro	210	260	270	290	1030	- do -
Mushroom	60	160	140	220	580	- do -
Nakima	35	165	120	140	460	- do -
Thotney	40	110	30	120	300	- do -
Bamboo Shoot	40	520	315	525	1400	- do -
Cane Shoot	35	210	255	255	755	- do -
Chimphing	3	55	65	85	208	- do -

Medicinal Plants & Herbs (Approximate quantity in kg)	2006-2007					Remarks
	North	East	South	West	Total	
Aconitum heterophyllum(Nilo Bikh)	80	25	-	30		Commercial
Aconitum ferox(Bikh Atees)	230	-	-	70	300	Commercial
Picrorrhza Kurooa (Kutki)	80	25	-	35	140	Local/Commercial
Nardostachys jatamansi(Jatamansi)	80	30	-	35	145	Local Use
Orchis latifolia (Panchamley)	25	23	-	25	73	Local Use
Podopyllum hexandrum(Ban Kakri)	35	25	-	25	85	- do -
Rheum emodi (Padamchal)	55	70	-	60	185	- do -
Hippophae salicifolia (Achuk)	50	-	-	-	50	- do -
Rhododendron anthopogan(Sunpati)	70	60	-	50	180	- do -
Juniper species (Dhup)	120	50	-	50	220	- do -
Swertia chiraita (Chirata)	60	70	340	650	1120	Commercial
Rubi cordifolia (Majito)	160	60	65	75	360	Local Use
Acorus Calamus (Bojho)	80	35	35	45	195	- do -
Aloe barbadensis(Ghewkumari)	-	25	35	35	95	- do -
Orozyllum indicum(Totola)	35	35	30	35	135	- do -
Terminalia bellirica (Barra)	-	25	35	45	105	- do -
Terminalia chebula(Harra)	-	40	35	40	115	- do -
Embllica officinalis (Amla)	-	35	75	55	165	- do -
Gloriosa superba (Kalihari)	-	40	100	50	190	Commercial
Stevia (Sweet plant)	-	-	-	-	-	- do -
Asparagus recemosus(Stavari)	-	-	-	-	-	- do -
NTFP Product (Approximate quantity in kg)						
Sishnu	230	280	180	230	920	Local Use
Ningro	250	280	280	315	1125	- do -
Mushroom	80	170	150	230	630	- do -
Nakima	45	175	130	150	500	- do -
Thotney	45	120	40	125	330	- do -
Bamboo Shoot	45	525	335	535	1440	- do -
Cane Shoot	45	230	275	275	825	- do -
Chimphing	5	65	75	90	235	- do -

Medicinal Plants & Herbs (Approximate quantity in kg)	2007-2008					Remarks
	North	East	South	West	Total	
Aconitum heterophyllum(Nilo Bikh)	90	35	-	40	165	Commercial
Aconitum ferox(Bikh Atees)	240	-	-	870	1110	Commercial
Picrorhiza Kurooa (Kutki)	90	35	-	45	170	Local/Commercial
Nardostachys jatamansi(Jatamansi)	90	40	-	45	175	Local Use
Orchis latifolia (Panchamley)	35	35	-	35	105	Local Use
Podopyllum hexandrum(Ban Kakri)	45	35	-	35	115	- do -
Rheum emodi (Padamchal)	65	80	-	80	225	- do -
Hippophae salicifolia (Achuk)	60	-	-	-	60	- do -
Rhododendron anthopogan(Sunpati)	90	80	-	70	240	- do -
Juniper species (Dhup)	160	60	-	70	290	- do -
Swertia chiraita (Chirata)	80	85	360	660	1185	Commercial
Rubi cordifolia (Majito)	180	70	80	85	415	Local Use
Acorus Calamus (Bojho)	85	45	55	55	240	- do -
Aloe barbadensis(Ghewkumari)	-	45	55	50	150	- do -
Orozylum indicum(Totola)	45	55	45	40	185	- do -
Terminalia bellirica (Barra)	-	35	40	50	125	- do -
Terminalia chebula(Harra)	-	50	45	45	140	- do -
Emblica officinalis (Amla)	-	55	85	70	210	- do -
Gloriosa superba (Kalihari)	-	60	140	60	260	Commercial
Stevia (Sweet plant)	-	-	-	-	-	- do -
Asparagus recemosus(Stavari)	-	-	-	-	-	- do -
NTFP Product (Approximate quantity in kg)						
Sishnu	250	290	190	250	980	Local Use
Ningro	270	295	290	325	1180	- do -
Mushroom	90	180	160	240	670	- do -
Nakima	55	185	170	160	570	- do -
Thotney	55	130	60	135	380	- do -
Bamboo Shoot	65	545	345	555	1510	- do -
Cane Shoot	55	240	285	290	870	- do -
Chimphing	10	75	85	100	270	- do -



Medicinal Plants & Herbs (Approximate quantity in kg)	2008-2009					Remarks
	North	East	South	West	Total	
Aconitum heterophyllum(Kalo Bikh) Kg.	250				250	
Aconitum ferox(Bikh Atees) Kg.						
Picrorhiza Kurooa (Kutki) Kg.	15				15	
Nardostachys jatamansi(Jatamansi) Kg.	10				10	
Orchis latifolia (Panchamley) Kg.	3				3	
Podopyllum hexandrum(Ban Kakri)						
Rheum emodi (Padamchal)						
Hippophae salicifolia (Achuk)						
Rhododendron anthopogan(Sunpati)						
Juniper species (Dhup)						
Swertia chiraita (Chirata) Kg.				800	800	
Rubi cordifolia (Majito) Kg.		100		120	220	
Acorus Calamus (Bojho)						
Aloe barbadensis(Ghewkumari)						
Orozyllum indicum(Totola) Capsul		200	360	300	860	
Terminalia bellirica (Barra) Kg		75	22		97	
Terminalia chebula(Harra) Kg.		75		250	325	
Emblica officinalis (Amla) Kg.		150	540	300	990	
Gloriosa superba (Kalihari) Kg.		200	472	250	922	
Stevia (Sweet plant) Kg.		20		10	30	
Asparagus recemosus(Stavari) Bundle.		100			100	
<b>NTFP Product</b> (Approximate quantity in kg)	North	East	South	West	Total	
Sishnu (Bundles)		250	1357	650	2257	
Ningro (Bundles)		200	496	350	1046	
Mushroom (Kg)		200	530	350	1080	
Nakima (Kg)		150	330		480	
Thotney (Bundles)		2000	220	380	2600	
Bamboo Shoot (Kg)		250	310	350	910	
Cane Shoot (No.)		250			250	
Chimphing						
Okher (Kg.)			740		740	
Lapsi (Kg.)			1100		1100	