

**GOVERNMENT OF HIMACHAL PRADESH
FOREST DEPARTMENT**



**WORKING PLAN FOR THE FORESTS
WORKING PLAN FOR THE FORESTS**

OF

ANNI FOREST DIVISION

(2022 TO 2032)

VOLUME-I

FINALLY SUBMITTED BY:

**DR. CHAMAN LAL, HPFS
WPO-CUM- DFO ANNI**

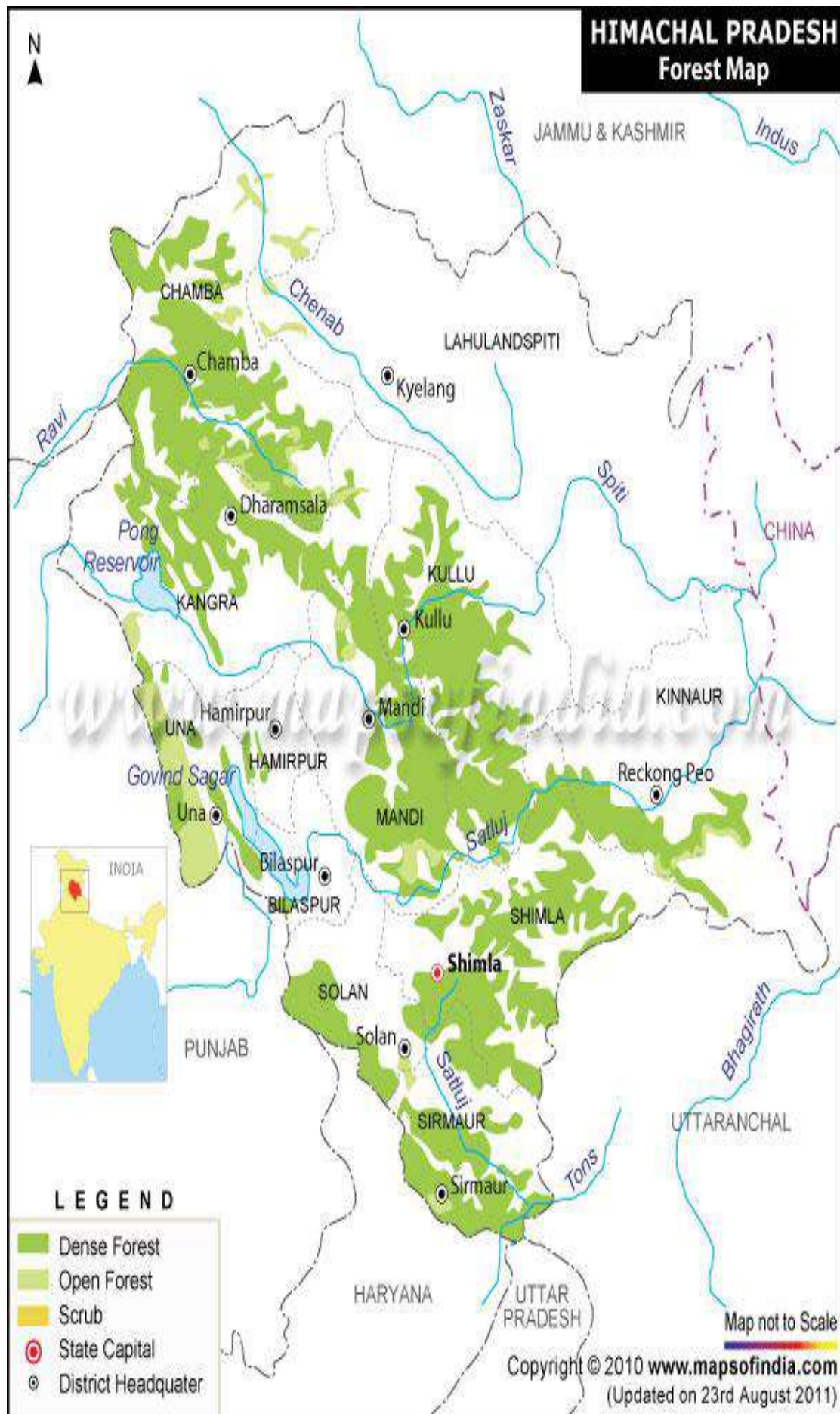
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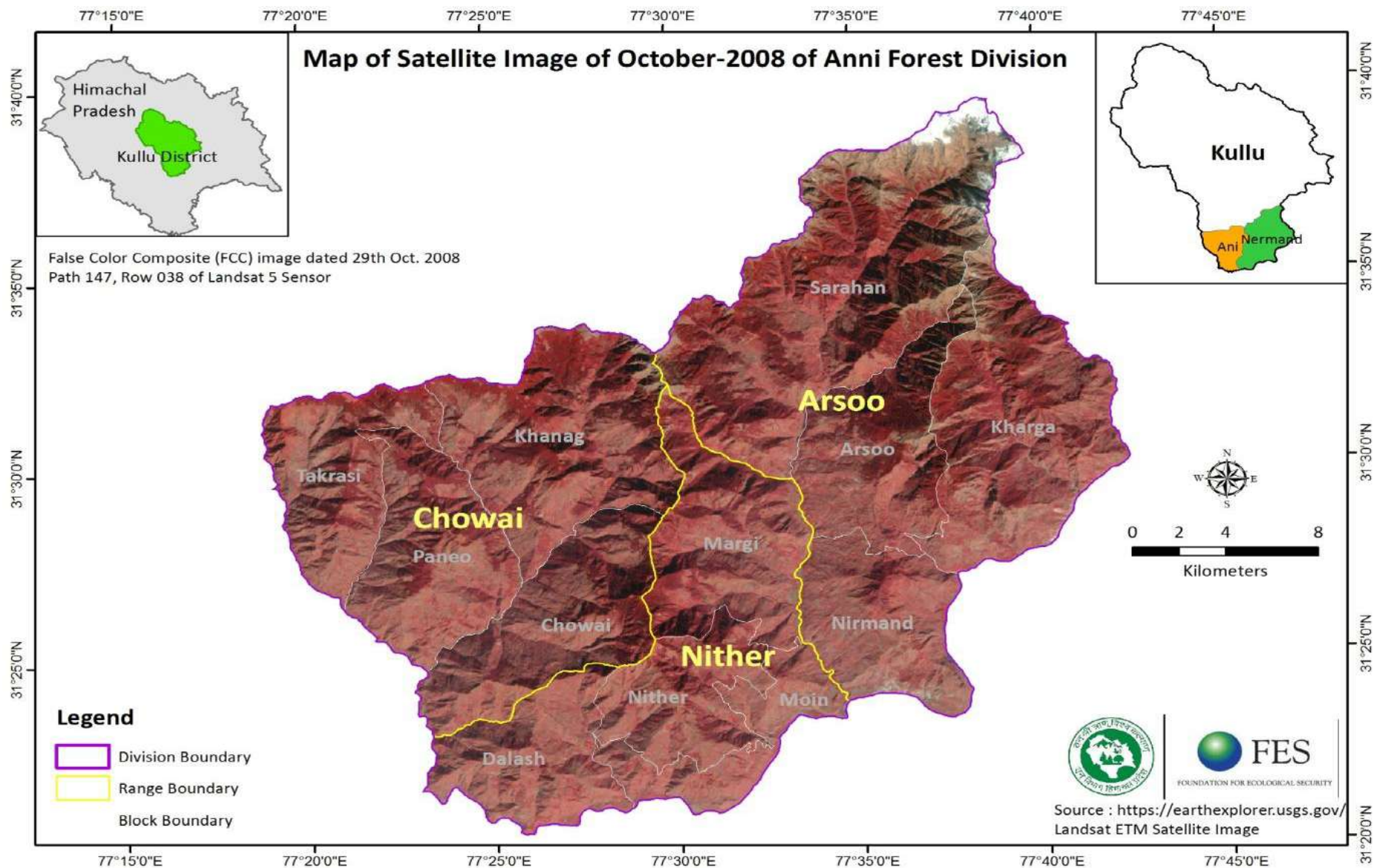
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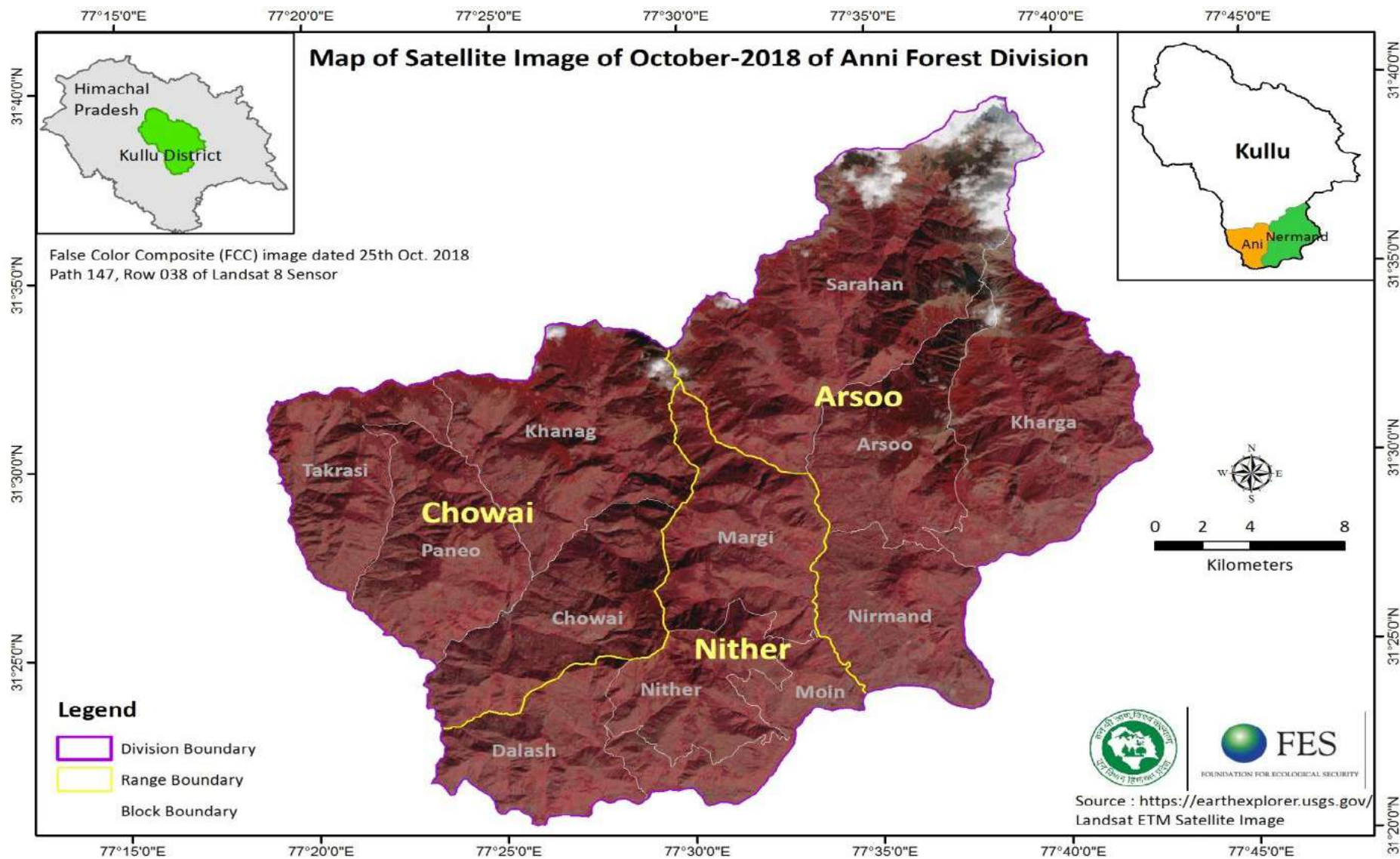
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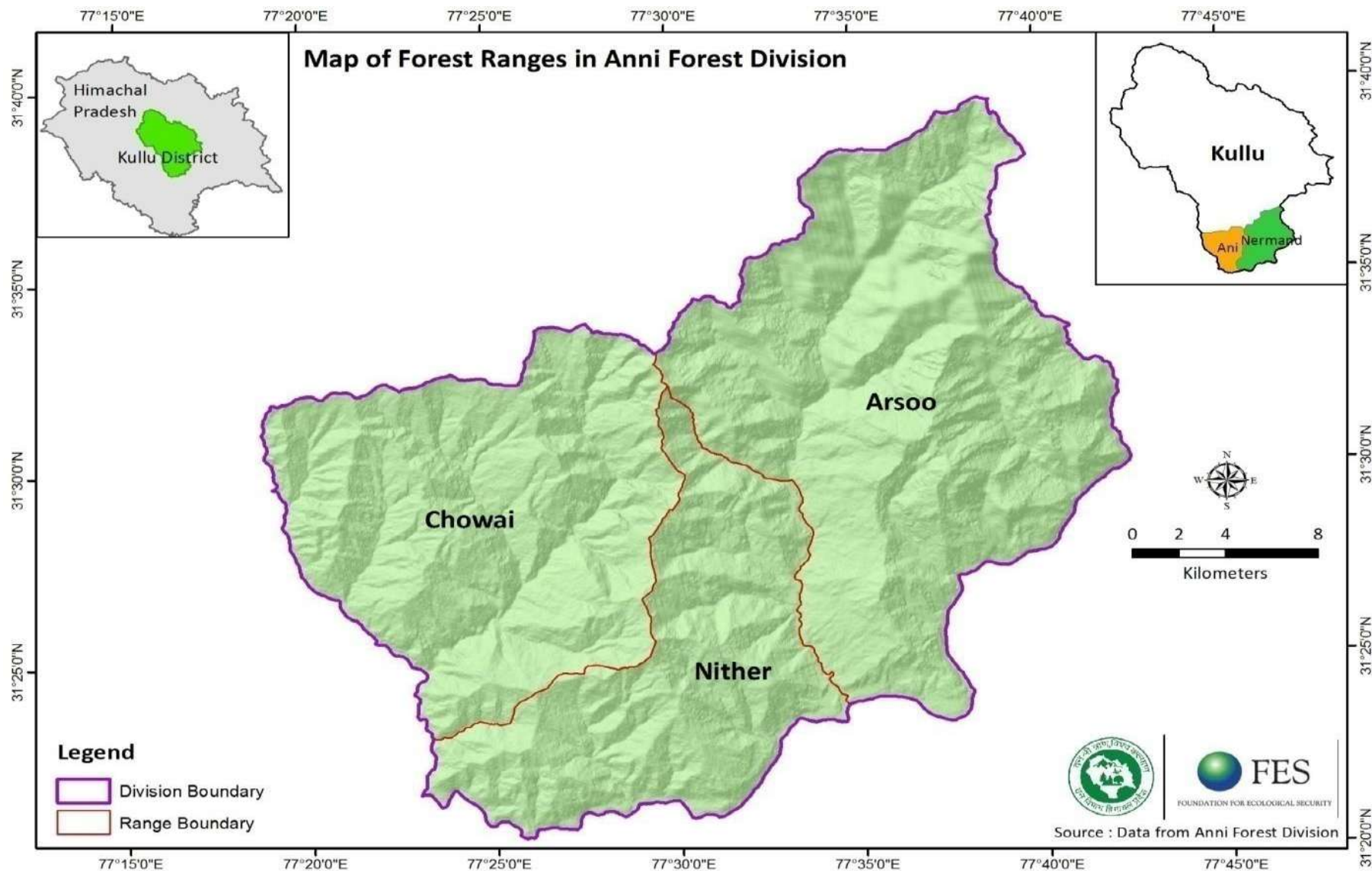
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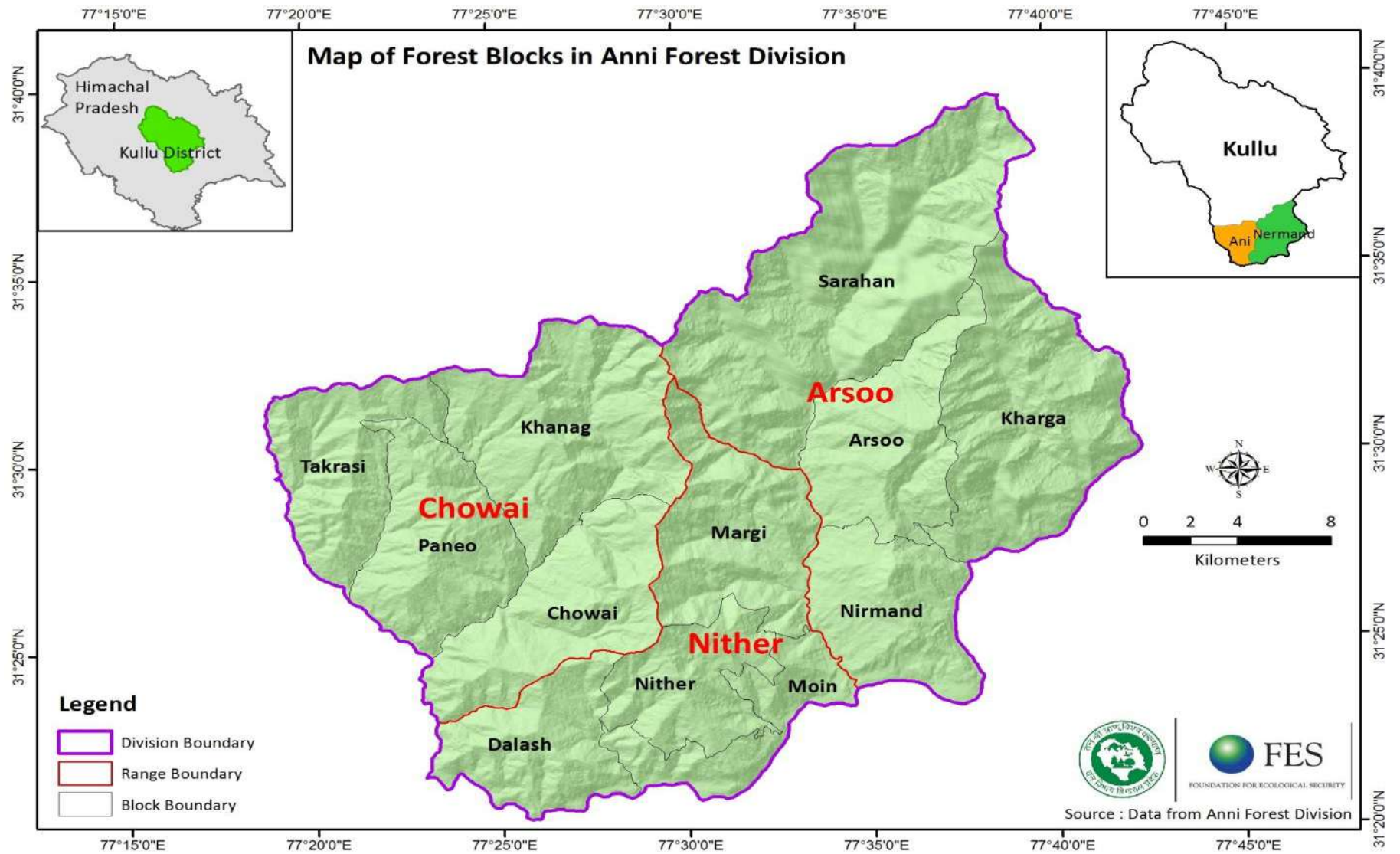
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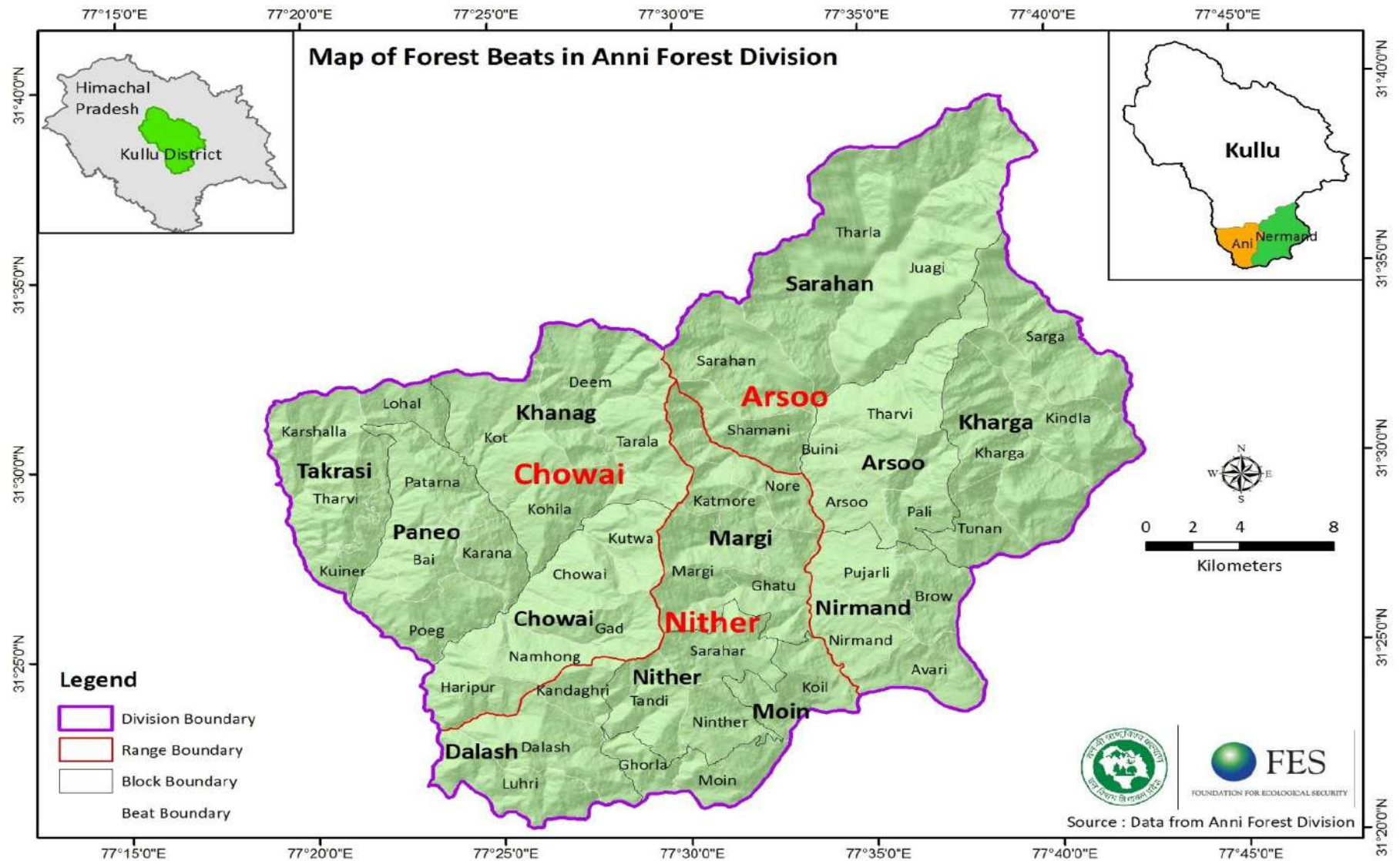












INTRODUCTION

This working plan is revision of Sh. Shamsheer Singh Negi's Plan (1996-1997 to 2011-12) and further extended by Government of India, Ministry of Environment and Forests, Northern Regional Office No. 13-7(20)/2003-ROC Dated 3rd March 2014 (**copy annexed as Appendix No. XXXII**). Field works were started during the year 2013. The field work and preparation of working plan was completed in the month of July, 2020.

The preliminary working plan report was written by Sh. C.B. Pandey, IFS, the then Chief Conservator of Forests, Rampur and was approved by the committee in the meeting held at Pinewood Hotel, Barog on dated 30.09.2013 and approval conveyed by Addl. Pr. CCF (WP & S) at Mandi vide letter No. 1583-97 Dated 11.10.2013

I have gone through the present working plan finally submitted by Dr. Chaman Lal, HPFS, WPO-cum- DFO Anni . The working plan contains few new chapters in terms of the National Working Plan Code, Govt. of India, MoEF, and year 2014. WPO's has emphasized in the present plan on Sustainable Conservation of Forests and many changes have been made in this plan based on Silvicultural requirement and betterment of Forest & wild life, in terms of the Hon'ble Supreme Court's order dated 12-12-1996 and 8-1-2001. The present working plan has been revised thoroughly, notwithstanding, the present moratorium on green felling, the revised working plan includes all regular working circles, prescribing yield and felling cycle/felling series depending on the condition of Forests in each working circles. This green felling in any Forest or in public Forest will be allowed / carried out strictly, in accordance with the approved prescription of working plan subject to the decision of the Hon'ble Supreme Court against the H.P. Govt. affidavit filed in the Apex Court on 21-2-1997 and an affidavit filed in pursuant to the order dated 14-2-2000, which is pending for adjudication before the Hon'ble court. The Hon'ble High court held that there shall be no felling of any tree in any Forest area in the State of Himachal Pradesh, whether private or State Forest, except in accordance with the orders passed by the Apex Court. However, in respect of felling of trees in private Forests in State of H.P, the Apex Court order dated 8-5-2009 held that felling of trees from the Forest area approved for non-Forestry use under Section 2 of the Forest (Conservation) Act, 1980 may continue to be permissible. Felling of trees in non-Forest area should be strictly regulated as per the provisions of the H.P. Land Preservation Act, 1978. Accordingly, felling of trees in private Forest areas is being allowed strictly in compliance of the Apex Court's order dated 8-5-2009 and vide H.P. Govt. Notification dated 19-2-2011.

No felling has been prescribed under Protection Working Circle. Emphasis is given to focus on the need of special attention to the management and conservation aspects of the species. A separate mandatory working circles i.e. Plantation, NTFP, Forest Protection (Fire, illicit felling, encroachment, illegal mining and poaching etc.), and Joint Forest Management & Wild Life Management (Overlapping) Working Circles have also been constituted for the first time and discussed in length with prescriptions of legal control mechanism, which would be very useful as reference. The chapter on NTFP gives an exhaustive list of the useful medicinal plants along with their uses, which would be very useful as reference. Similarly, the new chapter on Five Year Plans & Activities of H. P. State Forest Development Corporation Ltd. in harvesting and marketing of Forest produce, result of socio-economic survey, too, are in detailed form.

Special mention is to be made of the noteworthy work done to legal control mechanism in the present working plan, which is the first study of its kind in Himachal Pradesh.

Great efforts has gone into collection of data on human & cattle population, T.D. distribution, NTFP as well as land use classification i.e. recognized sub-division of Forest area data.

For the first time, the enumeration was conducted by using Grid System based technology in the tract of Anni Forest Division. The WPO and entire field staff was new to this technology. The enumeration data was further analyzed. Hence, there was delay in submission of final draft of working plan.

The WPO's and his staff deserve all appreciation for completing the revision of the plan, despite many constraints. The revised working plan has been prepared for a period of 10 years commencing from 1-4-2022 to 31-3-2032. The working plan under revision expired on 31-3-2015. As there were practically no Silvicultural fellings done during the last plan period and other prescriptions too, were not particularly followed, there is no problem in making the plan operative prospectively.

WPOs & staff worked very hard on the preparation of this working plan in shortest time without support of additional working plan staff and other resources in the first instance and deserve all appreciation for the same.

It is expected that the information provided and the prescriptions suggested in the plan would be very useful in deciding the management of Forest practices in future.

Dated:-

Addl. Pr.CCF, Working Plan
& Settlement, Mandi, H.P.

PREFACE

This Working Plan is revision of Sh. Shamsheer Singh Negi's Plan (1996-1997 to 2011-12) with extension upto 31.03.2015 as per the Revised National Working Plan Code, GOI, year 2014. We were assigned additional work of working plan of Anni Forest Division. However, field work was started during 2012-13 and completed in July, 2020. S./Sh. R.K.Bhalla, HPFS, the then DFO Cum WPO, Anni & Sh. V.K. Aggarwal, HPFS had also started the field work and writing of Working Plan during their tenure as DFO-cum-WPO, Anni. Sh.V.K.Aggarwal had also submitted the chapter on Wildlife Management (Overlapping) Working Circle during 2016, which was duly approved by the Pr.CCF, Wildlife, HP. Subsequently, Sh. Chander Bhushan, HPFS and Sh. K.B. Negi, HPFS contributed in data processing for preparation of working plan during their tenure as WPO-cum- DFO, Anni.

The preliminary working plan report was written by Sh. C.B.Pandey, IFS, the Chief Conservator of Forests, Rampur and was approved by the committee in the meeting held at Pinewood Hotel, Barog on dated 30.09.2013 and approval conveyed by Addl. Pr. CCF (WP & S) at Mandi vide letter No. 1583-97 Dated 11.10.2013.

The preparation of the revised working plan for Anni Forest Division has been a great learning experience for all WPOs. It has been a great team effort, laborious and difficult nature, which were impossible to be completed without sincere efforts made by the staff in the field as well as in the office as mandate given by the Pr. CCF H.P., Shimla. Special thanks are due to the Pr. CCF, H.P. (HoFF) Sh Ajay Srivastava, IFS, Smt. Archana Sharma, IFS, Pr. CCF Wildlife, H.P (now Retired), and Sh. H.V. Kathuria, CCF. (Working Plan) for their constant guidance, encouragement and help during the preparation of this working plan.

The revised working plan has been prepared for a period of 10 years, commencing from 1-4-2022 to 31-3-2032. The working plan under revision expired on 31-3-2012 and the extended plan also expired on 31-03-2015. As, there was practically, no silviculture fellings during the last plan period in terms of the Hon'ble Supreme Court order dated 12-12-1996, there is no problem in making the plan operative prospectively.

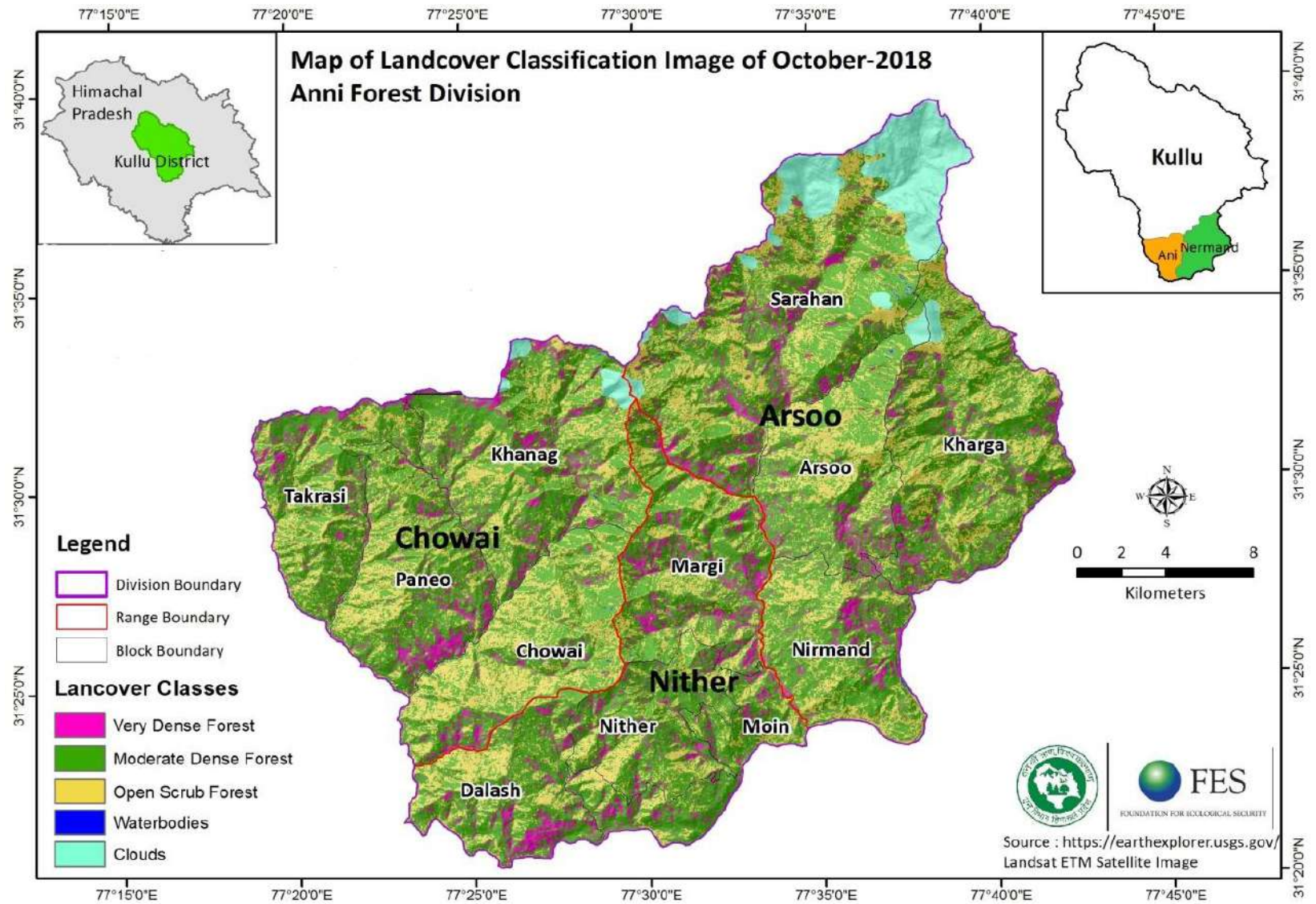
The working plan had the benefit of being supervised by many superior officers of the rank of CCF and Addl. Pr. CCF, owing to the frequent changes at these levels in the working plan set up. I am highly indebted to Sh. Anil Thakur, IFS, APCCF, (WL) (the then CCF Rampur,) Sh. B. L. Negi, IFS, Conservator of Rampur Circle, (now Retired), Sh Ajit Thakur, IFS present Chief Conservator of Forests, Rampur Circle, and special thanks to Sh. H.V. Kathuria, CCF. (Working Plan) and Sh. C.M. Sharma (Retd. DFO), who were instrumental in providing the necessary guidance to the undersigned.

I would like to acknowledge the valuable contribution rendered by all the staff of the Anni Forest Division. Thanks are due to all the field staff and ministerial staff of Anni Forest Division at Luhri for their sincere support in the preparation of the working plan.

Finally, I am thankful to S/Sh. Anurag, JOA (IT) for his arduous effort and Sh. Ravinder Singh, Clerk, Sh.Narender Kumar, JOA (IT) who have co-operated in typing and compilation of data of this working plan in a nice manner in the shortest possible time.

Place: - Luhri
Dated: 27.06.2022

Dr Chaman Lal, (HPFS)
Divisional Forest Officer
Anni Forest Division at Luhri



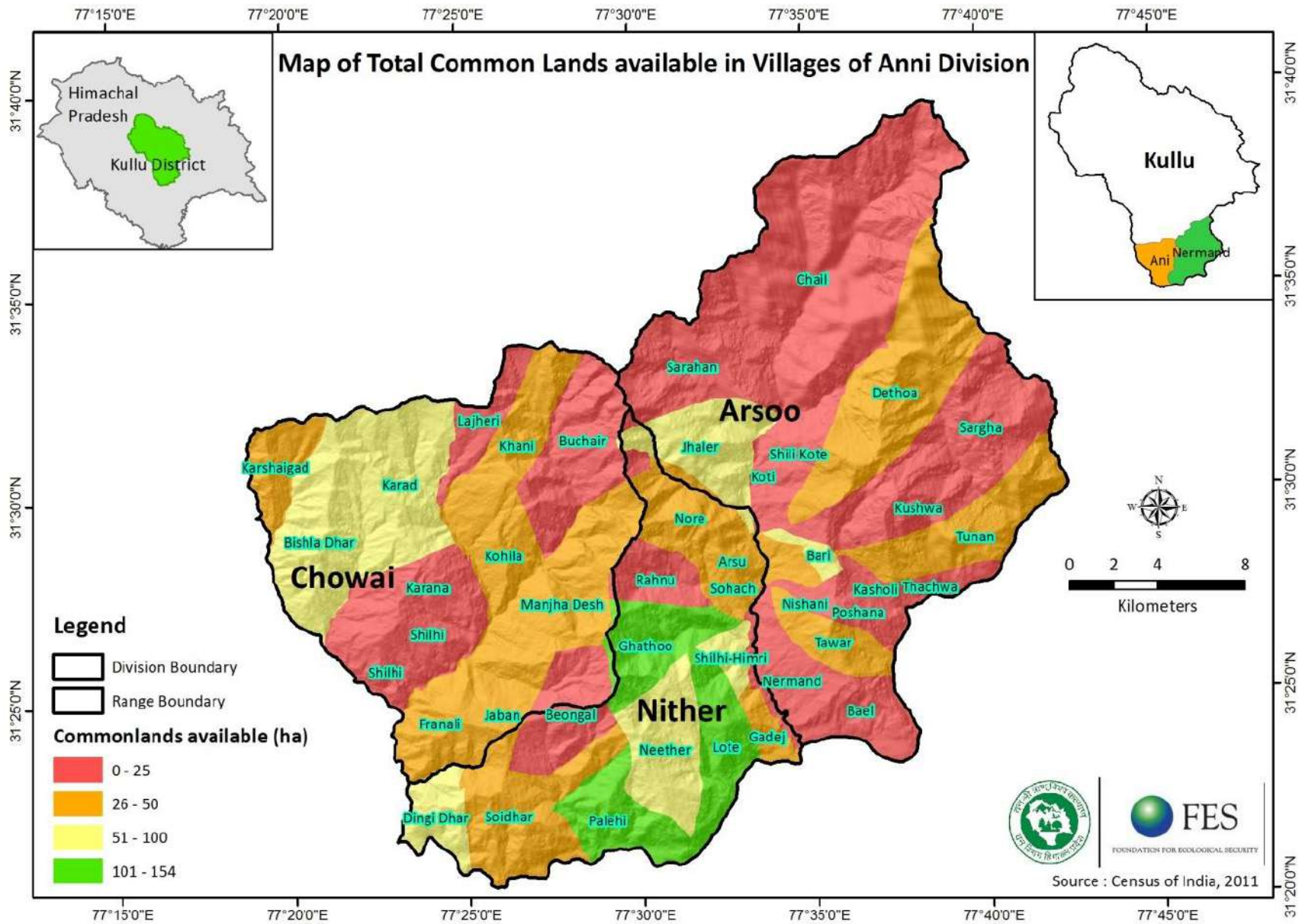


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GLOSSARY OF THE VERNACULAR TERMS

LOCAL TERMS	ENGLISH EQUIVALENT
Balli	Round unsawn timber used in houses as rafter or post.
Chak	Included cultivation within Forest boundary. In Kullu, Revenue Settlement, the term Chak is used for Phatti or a revenue estate also.
Chowkidar	Watchman.
Chhanda	The river is land beyond the boom, where timber gets stranded.
Chan	Temporary shelter made for resting the cattle.
Dandasa	The trade name of the bark of walnut roots, used for cleaning teeth by ladies.
Dehat	Village
Deota	The local God.
Dhar	A spur of a ridge. Also used for an alpine pasture.
Doghri	A small farm house on the land, usually away from the main village.
Gahr	Wooded Forest, away from habitation.
Gad	A small stream with perennial water.
Gaddies	The professional shepherds belonging to district Chamba or Kangra.
Gattu	A small odd size of scantling usually less than 4 feet in length.
Gharat	A water flour mill.
Ghal	Timber floating in the stream or river.
Ghasni	The village grass land.
Ghati	The pass in a main ridge.
Ghee	Clarified butter.
Gujjar	The nomadic buffalo grazier, generally mohanmadan.
Ghayan	Grass land.
Hakries	Small triangular split up pieces of wood , usually less than 5 feet in length.
Hath	Hand, equivalent to one and a half feet.
Illaqu	Area.
Joghthi	Torchwood.
Karries	Scantlings.
Kanda	A ridge.
Kanungo	A revenue official immediately above Patwari.
Khad	A small stream with perennial water.
Kharif	Rainy season crop.
Kinnauras	Residents of illaqa Kinnaur , Bushahr.
Kuhl	A water channel.
Kothi	A revenue estate comprised of phaties.
Lambardar	The village headman.
Mali	Gardener or man employed for maintenance of nurseries.
Mohal	A revenue estate.
Mazdoor	A labourer.
Muharrir	Man employed on check work.
Nala or nallah	A ravine or depression with or without water.

Nautor	Land granted for fresh cultivation.
Nigahr	Alpine pasture.
Negi	Headman of Kothi
Phatti	A revenue estate comprised of some villages having its boundary of Nala of ridge.
Panchayat	Village council.
Panwi	A grass land , burnt annually during winter.
Patwari	Revenue official in charge of the smallest revenue unit.
Rasu	Headman of Shepherds.
Rabi	Winter crop.
Rakha	A watchman for protection of Forest.
Sothaur	Dry or green leaves of trees used for cattle bedding.
Sang	A round balli for the preparation of plough.
Shamai	Yoke.
Tehsildar	A revenue officer, incharge of a tehsil.
Tibba	Peak.
Thach	Small grassy blanks in alpine Forests used as halting places by glaziers.
Wajib-ul-arz	Regulation regarding land, Rights etc.
Naksha-Bartan	Regulation of user Rights.

Glossary of common Trees, Shrubs, Herbs and Grasses found in Anni Forest Division

A:- Trees		
Sr. No.	Botanical name	Local name
1	2	3
1.	<i>Abies pindrow</i>	Tosh
2.	<i>Abies spectabilis</i>	Tosh
3.	<i>Acer oblongum</i>	Parang
4.	<i>Acer pictum</i>	Rikhandlu
5.	<i>Acer caudatum / Acer villosum</i>	Rikhandlu
6.	<i>Acer caesium</i>	Chirandru, Manderang
7.	<i>Aesculus indica</i>	Khanoor, Poo
8.	<i>Albizzia lebbek</i>	Siris
9.	<i>Albizzia chinensis (Syn. A. satipulata)</i>	Ohi
10.	<i>Alnus nitida</i>	Kosh, Kunish, Nyum
11.	<i>Alnus nepalensis</i>	Kunish
12.	<i>Bauhinia variegata</i>	Kachnar, Karal
13.	<i>Buxus sempervirens</i>	Bhojpatra
14.	<i>Buxus wallichiana (Syn. Buxus sempervirens)</i>	Shamshad
15.	<i>Carpinus viminea</i>	Khirkii, Lolti
16.	<i>Castanea sativa</i>	Shamshad
17.	<i>Cedrus serrata</i>	Mitha-Khanor
18.	<i>Cedrela serrata</i>	Darb, Krishing
19.	<i>Cedrus deodara</i>	Deodar, Kelo, Diar, Kialmang
20.	<i>Cedrela toona</i>	Darle
21.	<i>Celtis australis</i>	Khirkak, Koo
22.	<i>Cornus capitata</i>	Kharkak
23.	<i>Cornus macrophylla</i>	Khagsha
24.	<i>Corylus colurna</i>	Banshari
25.	<i>Cupressus sempervirens</i>	Saru
26.	<i>Cupressus torulosa</i>	Devidiar
27.	<i>Dalbergia sissoo</i>	Shisham
28.	<i>Elaeagnus umbellata</i>	Chiai
29.	<i>Emblica officinalis</i>	Aonla
30.	<i>Eucalyptus globulus</i>	Safeda
31.	<i>Euonymus tingens</i>	Barmelui, Kalachindwara
32.	<i>Engelhardtia colebrookiana</i>	Samma
33.	<i>Eucalyptus Spp.</i>	Safeda
34.	<i>Fraxinus micrantha</i>	Angu
35.	<i>Ficus palmata</i>	Phedu
36.	<i>Ficus religiosa</i>	Pipal
37.	<i>Ficus roxburghii</i>	Trimabal
38.	<i>Fraxinus floribunda</i>	Angah
39.	<i>Fraxinus micrantha</i>	Angah
40.	<i>Grewia oppositifolia</i>	Biul
41.	<i>Ilex dipyrrena</i>	Kanderu
42.	<i>Juglans regia</i>	Akhrot, Khor, ka

43.	<i>Juniperus macropoda</i>	Guggal, Dhup, Shur
44.	<i>Litsaea umbrosa</i>	Paror, Chirindi
45.	<i>Machilus duthiei</i>	Chan, Chirindi
46.	<i>Melia azedarach</i>	Bakain, Drek
47.	<i>Morus alba</i>	Tut
48.	<i>Morus serrata</i>	Kimu
49.	<i>Myrica nagi</i>	Kaphal
50.	<i>Olea cuspidata</i>	Kahu
51.	<i>Ougeinina oojeinensis</i>	Sandan
52.	<i>Picea smithiana</i>	Spruce, Rai, Rayang
53.	<i>Pinus wallichiana</i>	Kail, Lim
54.	<i>Pinus roxburghii</i>	Chil
55.	<i>Pieris ovalifolia</i>	Ayar, Yarta
56.	<i>Pistacia integerrima</i>	Kakkar, Kakrian
57.	<i>Populus ciliata</i>	Poplar, Pahari Pipal, Chalun, Karamal, Mangal
58.	<i>Prunus armeniaca</i>	Chulli, chul
59.	<i>Prunus cerasoides</i>	Paja
60.	<i>Prunus persica</i>	Aaroo, Behmi, Reg
61.	<i>Pyrus foliolosa</i>	Ranreg
62.	<i>Pyrus lanata</i>	Ban Palti, Marpol
63.	<i>Pyrus pashia</i>	Shagal, Batangi, Kainth, Lee
64.	<i>Quercus leucotricophora</i>	Ban, Bani
65.	<i>Quercus semecarpifolia</i>	Kharshu, Kor
66.	<i>Rhamus virgata</i>	Chorda
67.	<i>Rhododendron arborium</i>	Baras, Parag
68.	<i>Rhododendron campanulatum</i>	Samrat, Sarngar
69.	<i>Rhus continus</i>	Tung
70.	<i>Rhus punjabensis</i>	Akhral, Titri
71.	<i>Rhus wallichii</i>	Hurku, Shush
72.	<i>Robinia pseudoacacia</i>	Pahari kikar
73.	<i>Salix babylonica</i>	Majnun, Shon
74.	<i>Salix daphnoides / Salix alba</i>	Beuns
75.	<i>Salix elegans</i>	Bhashal, Beuns, Shon
76.	<i>Salmalia malabarica</i>	Simal
77.	<i>Sapindus mukorossi</i>	Ritha
78.	<i>Sapium insigne</i>	Dudhli
79.	<i>Symplocos crataegoides</i>	Tarchrbi
80.	<i>Sapium sebiferum</i>	Lodj, Lodhar
81.	<i>Taxus baccata</i>	Rakhal, Barmi, Neyamdal
82.	<i>Ulmus wallichiana</i>	Marn, Parmani
B-SHRUBS AND HERBS		
	Botanical Name	Local Name
1.	<i>Agave americana</i>	Ramban
2.	<i>Adhatoda vasica</i>	Basuti
3.	<i>Aralia cachemirica</i>	Akhota
4.	<i>Artemisia vulgaris</i>	Charmar, Kubash
5.	<i>Arundinaria falcata</i>	Nirgals
6.	<i>Arundinaria spathiflora</i>	Nirgals
7.	<i>Arundo donax</i>	Phiral, Naru

8.	<i>Astragalus candolleanus</i>	Rudravanti
9.	<i>Astragalus rhizanthus</i>	Root-Flower Milk-Vetch
10.	<i>Berberis chitria</i>	Kashmal, Chutrum
11.	<i>Berberis aristata</i>	Kashmal, Khepacho
12.	<i>Berberis lycium</i>	Kashmal, chutrum
13.	<i>Berberis kunawurensis</i>	Kashmal, chutrum
14.	<i>Boehmeria paniculata</i>	Sendroi
15.	<i>Caragana gerardiana</i>	-
16.	<i>Caragana brevispina</i>	Shameh
17.	<i>Colebrookai oppositifolia</i>	Bhamber
18.	<i>Coriaria neplensis</i>	Masuri, lit zaklo
19.	<i>Colutea nepalensis</i>	Chum raonsh, banang
20.	<i>Cotoneaster acuminata</i>	Chum, Raonsh, banang
21.	<i>Cotoneaster bacillaris</i>	Reuns, Raonsh, banang
22.	<i>Cotoneaster microphylla</i>	Raonsh
23.	<i>Crataegus oxyacantha</i>	Bat sangli
24.	<i>Daphne oleoides</i>	Jiko
25.	<i>Daphne papyracea</i>	Kaula, gandiri
26.	<i>Desmodium sambuense</i>	Safed kathi
27.	<i>Desmodium tilieaefolium</i>	Mortoi, mus
28.	<i>Deutzia staminea</i>	Ghugtai
29.	<i>Deutzia corymbosa</i>	Philru, chururu, kakhu
30.	<i>Dodonaea viscosa</i>	Mehndu
31.	<i>Elsholtzia polystachya</i>	Potha
32.	<i>Elaeagnus umbellate</i>	Geai, gehain, surch
33.	<i>Euonymus lacerus</i>	Angoa
34.	<i>Euphorbia royleana</i>	Shuru
35.	<i>Flemingia fruticulosa</i>	Chopru
36.	<i>Indigofera dosua</i>	Kathi, Kanthi
37.	<i>Indigofera hebeptala</i>	Kathi, Kanthi, Kastiarang
38.	<i>Indigofera gerardiana</i>	Kathi, Kanthi
39.	<i>Indigofera heterantha</i>	-Do-
40.	<i>Indigofera pulchella</i>	-Do-
41.	<i>Inula cappa</i>	-
42.	<i>Juniperus recurva</i>	Thaily, Guggal, Thailu
43.	<i>Jasminum humile</i>	Chameli, Kurang
44.	<i>Lepidagathis cuspidata</i>	-
45.	<i>Lepidagathis lanceolata</i>	Choti Frodari
46.	<i>Loranthus elatus</i>	Banda, Pand
47.	<i>Lonicera angustifolia</i>	Pirlu Kantias
48.	<i>Lonicera oreintalis</i>	Tiknoi
49.	<i>Loniniera quinquelocularis</i>	Bhajawal, Bakhru
50.	<i>Loranthus vestitus</i>	Pand
51.	<i>Mohonia nepalensis</i>	Khoru
52.	<i>Moriandra strobilifera</i>	Pothi
53.	<i>Morraya koenigii</i>	Gandhela
54.	<i>Myrsine africana</i>	Banwa, Chhota Mehndru, Chitring
55.	<i>Piptanthus nepalensis</i>	Chambo
56.	<i>Plectranthus rugosus</i>	Chhichhri, Piyag

57.	<i>Plactranthus coetsa</i>	Bangra
58.	<i>Prinsepia utilis</i>	Bhekal Bekhlang
59.	<i>Rhus cotinus</i>	Rikhal, Tung, Tugang
60.	<i>Rhododendron campanulatum</i>	Kashimiri patha, Sirmang
61.	<i>Rhododendron lepidotum</i>	Sumral
62.	<i>Rhamnus virgatus</i>	-
63.	<i>Roylea calycina</i>	Karnol titpati
64.	<i>Rubus biflorous</i>	Anchu
65.	<i>Rubus ellipticus</i>	Hinsar, Kala, Chosho
66.	<i>Rubus lasiocarpus</i>	Kalaksha, Swating
67.	<i>Rubus purpureos</i>	-
68.	<i>Salix hastata</i>	Buins
69.	<i>Salix denticulata</i>	-
70.	<i>Salix daphnoides</i>	Buinus, Bhainsala
71.	<i>Sarcococca saligana</i>	Taliary, Charabara
72.	<i>Skimmia laureola</i>	Shashra, Kedar patti, Shuru
73.	<i>Spiraea canescens</i>	Takol, Chaku, Taku
74.	<i>Spiraea bella</i>	-
75.	<i>Spiraea lindleyana</i> Syn. <i>S. sorbifolia spiraea vestita</i>	Kaltiri, Kueht
76.	<i>Solanum dulcamar</i>	-
77.	<i>Staphylea emodi</i>	Nag Daun
78.	<i>Smilax vaginata</i>	Peepal Satta
79.	<i>Syringa emodi</i>	-
80.	<i>Saussurea lappa</i>	Kuth
81.	<i>Viburnum coriaceum</i>	-
82.	<i>Viburnum cotinifolium</i>	Taliana, Bhutool, Tustus
83.	<i>Viburnum Stellulatum</i>	Richhoi
84.	<i>Viburnum nervosum</i>	Tilenal, Talkha, Thalin
85.	<i>Viscum album</i>	Bhangra
86.	<i>Vitex negundo</i>	Bana
87.	<i>Wikstroemia canescens</i>	Chambat, Tilak
88.	<i>Woodfordia floribunda</i> (Syn <i>W. fruticosa</i>)	Dhan, Dawe
89.	<i>Zanthoxylum alatum</i>	Timber, Tirmira, Timri
90.	<i>Zizyphus nummularia</i>	Beri
91.	<i>Zizyphus oxyphylla</i>	Beri
	HERBS	
92.	<i>Aconitum heterophyllum</i>	Patish, Mohra
93.	<i>Achyranthes aspera</i>	Puthkanda
94.	<i>Agrimonia eupatorium</i>	Kanaula
95.	<i>Angelica glauca</i>	
96.	<i>Ainsliaea aptera</i>	Durwa, kalighati
97.	<i>Anaphalis arvensis</i>	-
98.	<i>Anaphalis nubigena</i>	Bhujnu
99.	<i>Androsace lanuginosa</i>	-
100.	<i>Androsace rotundifolia</i>	-
101.	<i>Androsace sarmentosa</i>	-
102.	<i>Anemone obiusilosa</i>	Ageli
103.	<i>Anemone rivularis</i>	Ageli, Carbini, maruiri
104.	<i>Aquilegia pubiflora</i>	-

105.	<i>Asparagus filicinus</i>	Sahasimuli
106.	<i>Atropa belladonna</i>	Saagngur
107.	<i>Bidens wallichii</i>	-
108.	<i>Boenninghausenia albiflora</i>	Pesmmar
109.	<i>Campanula colorata</i>	-
110.	<i>Cannabis sativa</i>	Bhag, kus
111.	<i>Capsella bursa-pastoris</i>	-
112.	<i>Carum carvi</i>	Zira
113.	<i>Chenopodium album</i>	Tulsi, Dankhar
114.	<i>Datura stramonium</i>	Datura
115.	<i>Delphinium denudatum</i>	Nirvisi
116.	<i>Delphinium vestitum</i>	Kalulu
117.	<i>Digitalis purpurea</i>	-
118.	<i>Dipsacus inermis</i>	Tori
119.	<i>Echinops cornigerus</i>	-
120.	<i>Echinops niveus</i>	-
121.	<i>Ephedra gerardiana</i>	Somlata, Khanta
122.	<i>Erigeron multiradiatus</i>	-
123.	<i>Erythimum hieracifolium</i>	-
124.	<i>Fagopyrum cymosum</i>	-
125.	<i>Fragaria vesca</i>	Balbalsho
126.	<i>Foenieuhum vulzare</i>	Saunf
127.	<i>Gallium spp.</i>	-
128.	<i>Gentian argented</i>	Nili sarnal
129.	<i>Gentian kurroo</i>	Karu, Kore
130.	<i>Geranium nepalense</i>	Tirrahani
131.	<i>Geranium ocellatum</i>	-
132.	<i>Geranium robertianum</i>	-
133.	<i>Geranium wallichianum</i>	Chowhri
134.	<i>Geraradiana heterophylla</i>	Bechu buti
135.	<i>Impatiens scabrida</i>	-
136.	<i>Jurinea macrocephalla</i>	Dhup
137.	<i>Leucas cephalotus</i>	-
138.	<i>Mentha sylvestris</i>	Podina
139.	<i>Myosotis sylvatica</i>	-
140.	<i>Nepeta ciliaris</i>	Brun
141.	<i>Nepeta elliptica</i>	-
142.	<i>Pedicularis pectinata</i>	-
143.	<i>Phlomis bracteosa</i>	-
144.	<i>Picrorhiza kurroa</i>	Karu, kardi, karwi
145.	<i>Podophyllum hexandrum</i>	Bankakri, Papri
146.	<i>Polygonatum cirrifolium</i>	-
147.	<i>Polygonatum verticillatum</i>	Salam mishri
148.	<i>Polygonum alatum</i>	Malora
149.	<i>Potentilla argyrophylla</i>	-
150.	<i>Potentilla atosanguinea</i>	-
151.	<i>Potentilla nepalensis</i>	Dora
152.	<i>Potentilla sibbaldi</i>	-
153.	<i>Plantago tibetica</i>	-
154.	<i>Primula denticulate</i>	Hantingoo

155.	<i>Primula petiolaris</i>	Kouri, Phantingoo
156.	<i>Ranunculus arvensis</i>	-
157.	<i>Rumex hastatus</i>	Malora, Bhilmora
158.	<i>Rumex nepalensis</i>	Malora, Bhilmora
159.	<i>Salvia glutinosa</i>	Gwadra
160.	<i>Salvia lanata</i>	-do-
161.	<i>Salvia lappa</i>	Kuth, Koot
162.	<i>Saxifrage diversifolia</i>	-
163.	<i>Scrophularia himalensis</i>	-
164.	<i>Solanum indicum</i>	Bhut-kataia
165.	<i>Solanum nigrum</i>	
166.	<i>Sweritia chirata</i>	Charaita
167.	<i>Swertia cordata</i>	-do-
168.	<i>Swertia paniculata</i>	-do-
169.	<i>Tanacetum nubigenum</i>	-
170.	<i>Tanacetum longifolium</i>	Bhut kesi
171.	<i>Taraxacum officinale</i>	-
172.	<i>Thalictrum pedunculatum</i>	Gabini Mamiri
173.	<i>Thalictrum javanucum</i>	-do-
174.	<i>Thalictrum neurocarpum</i>	Barmod
175.	<i>Trifolium repens</i>	Kuth
176.	<i>Thymus serpyllum</i>	-
177.	<i>Smilax vaginata</i>	Ban jewain
178.	<i>Valeriana hardwickii</i>	-
179.	<i>Valeriana pyrolaefolia</i>	Nlhani, Nakh
180.	<i>Veleriana wallichii</i>	-
181.	<i>Verbascum thapsus</i>	Mushkbala
182.	<i>Veronica serpyllifolia</i>	-
183.	<i>Viola canescens</i>	Banafsha
184.	<i>Viola serpens</i>	Banafsha
185.	<i>Viola patrinii</i>	-do-
186.	<i>Wulfenia amherstiana</i>	-
C- CLIMBERS		
187.	<i>Aquilegia pubiflora</i>	Kali gatti
188.	<i>Ainsliaea aptera</i>	-
189.	<i>Ajuga parviflora</i>	Bhunju
190.	<i>Anaphalis mubigena</i>	Ageli
191.	<i>Anemone rivularis</i>	Ageli
192.	<i>Anemone vitifolia</i>	Sapalu
193.	<i>Arisaema helleborifolium</i>	Sapalu
194.	<i>Boenninghausenia albiflora</i>	Pissu buti
195.	<i>Bauhinia vahlii</i>	Taur
196.	<i>Caltha palustris</i>	
197.	<i>Cannabis sativa</i>	Bhang
198.	<i>Cuscula reflexa (parasite)</i>	Akashabel
199.	<i>Clematis connate</i>	Garol, Wantah
200.	<i>Clematis grata</i>	Garol, Wantah
201.	<i>Clematis barbellata</i>	Belkangu, Chabru, Wantah
202.	<i>Clematis montana</i>	Garol, Wantah
203.	<i>Cynoglossum lanceolatum</i>	-

204.	<i>Delphinium denudatum</i>	Main
205.	<i>Dioscorea deltoidea</i>	Kunj Calendi, Singlimingli, Baniatakari
206.	<i>Echinops echinatus</i>	Gorkhru
207.	<i>Ficus scadens</i>	Makhota
208.	<i>Fragaria indica</i>	Bhumla
209.	<i>Fragaria vesca</i>	Bhumla
210.	<i>Galium acutum</i>	-
211.	<i>Galium rotundifolium</i>	-
212.	<i>Geranium spp</i>	-
213.	<i>Gerbera lanuginosa</i>	Kofi Bhujlu
214.	<i>Girardinia heterophylla</i>	Kugshi
215.	<i>Hedera helix</i>	Grumru
216.	<i>Jasminum officinale</i>	Malti, Bammalti
217.	<i>Impatiens gigantea</i>	Junglee timber
218.	<i>Impatiens racemosa</i>	Junglee timber
219.	<i>Iris nepalensis</i>	-
220.	<i>Jasminum dispersum</i>	Malti
221.	<i>Ophiopigen intermedius</i>	-
222.	<i>Oxalis acetosella</i>	-
223.	<i>Polygonatum multiflorum</i>	Salam misri
224.	<i>Polygonatum verticillatum</i>	Salam misri
225.	<i>Potentilla regid</i>	-
226.	<i>Rosa macrophylla</i>	Pahari gulab, Kuja, Benyal
227.	<i>Rosa moschala</i>	Kuja, Yal
228.	<i>Rubia cordifolia</i>	
229.	<i>Rumex hastatus</i>	Malera, Bhilmora
230.	<i>Rumex nepalensis</i>	Malera, Bhilmora
231.	<i>Schizandra grandiflora</i>	Ballon, Bani
232.	<i>Smilax vaginata</i>	-
233.	<i>Smilax parvifolia</i>	-
234.	<i>Salvia glutinosa</i>	
235.	<i>Tahlictrum javanicum</i>	Carbini
236.	<i>Tahlictrum foliolosum</i>	Carbini
237.	<i>Thymus serphyllum</i>	Ban jawain
238.	<i>Trifolium pratens</i>	
239.	<i>Trifolium rapens</i>	
240.	<i>Urtica dioica</i>	Ain
241.	<i>Verbascum thapsus</i>	Gidar tambaku
242.	<i>Vitis lantana</i>	Pani bel, Bali
243.	<i>Vitis semi-cordata</i>	Miaza
244.	<i>Vitis trifolia</i>	Pola
245.	<i>Vitis parvifolia</i>	Panibel
246.	<i>Zehneria umbellata</i>	Ban Karela
D-GRASSES AND BAMBOOS		
1.	<i>Andropogon ischaemum</i>	-
2.	<i>Agropyron longearistatum</i>	-
3.	<i>Agropyron semicostatum</i>	-
4.	<i>Agrostis alba</i>	-

5.	<i>Agrostis royleana</i>	-
6.	<i>Arthraxon lanceolatus</i>	-
7.	<i>Arundinaria falcate</i>	Ringal, Nirgal, Poo
8.	<i>Arundinaria spathiflora</i>	-do-
9.	<i>Arundinella brasiliensis</i>	-
10.	<i>Arundinella setosa</i>	-
11.	<i>Arundo donax</i>	Nal, Naldura, Rajal
16.	<i>Cynodon dactylon</i>	Dub, Drub
17.	<i>Calamagrostis littorea</i>	-
18.	<i>Dactylis glomerata</i>	-
19.	<i>Danthonia cachemyriana</i>	-
24.	<i>Festuca gigantea</i>	-
25.	<i>Festuca kashmiriana</i>	-
26.	<i>Festuca modesta</i>	-
27.	<i>Ischaemum nototum</i>	-
28.	<i>Muehlenbergia himalayensis</i>	-
29.	<i>Neyraudia madagascariensis</i>	-
30.	<i>Oplismenus compositus</i>	-
31.	<i>Oryzopsis aequigumis</i>	-
32.	<i>Panicum plicatum</i>	-
33.	<i>Paspalum ambiguum</i>	-
34.	<i>Pennisetum flaccidum</i>	-
35.	<i>Poa pratensis</i>	-
36.	<i>Pogonatherum saccharoideum</i>	-
37.	<i>Pollinia mollis</i>	-
38.	<i>Pollinia quadrinervis</i>	-
39.	<i>Setaria glauca</i>	Siun
40.	<i>Setaria viridis</i>	-
41.	<i>Sporobolus piliferus</i>	-
42.	<i>Stipa sibirica</i>	-
43.	<i>Tripogon filiformis</i>	-

ANIMALS, BIRDS, REPTILES AND FISH ETC. FOUND IN ANNI FOREST DIVISION

English Name	Scientific Name	Local Name
(A)Animals		
<u>(i)Cats</u>		
Panther or leopard	<i>Panthera pardus</i> , Linnaeus	Bagh, baghera
Leopard cat, jungle cat	<i>Felis bengalensis</i> , <i>Felis chaus</i> Guldensdoedt Syn.	Ban bilao, Jangli billi
Large tiger cat	<i>Felis viverrina</i>	
<u>(ii)Bears</u>		
Himalayan black bear	<i>Selenarctos thibetanus</i> ,Syn. <i>Ursus torouatus</i> , G. Cuvier.	Bhalu
Wild Pig	<i>Sus indicus</i>	
<u>(iii)Dog family</u>		
Himalayan fox, Tibetan wolf Himalayan jackal, Tibetan wolf	<i>Vulpes bengalensis</i> , Shaw <i>Canis</i> Nodgson.	Lomri Siar
Wolf	<i>Canis pallips</i>	
Jackal	<i>Canis aureus</i>	Siyar
<u>(iv)Mongoose</u>		
Common mongoose	<i>Herpestes edwardsi</i> , Geoffroy	Neola
Haena	<i>Hyeona straita</i>	
<u>(v) Weasels</u>		
Himalayan yellow throated marten	<i>Martes flavigula</i> , boddaert	Chitralla
Himalayan weasel	<i>Musteres sibirica</i>	
<u>(vi) Goat & sheep group</u>		
Himalayan Thar	<i>Hemitragus jemlahicus</i>	Thar
Blue Sheep	<i>Pseudois nayaur</i>	Bharal
<u>(vii) Goat antelope group</u>		
Goral	<i>Nemorhaedus goral</i>	Goral, ghurar
Serrow	<i>Capricornis sumatrensis</i>	Serao
<u>(viii) Deer group</u>		
Spotted Deer	<i>Asix medius</i>	
Barking deer	<i>Muntiacus muntjak</i>	Kakar
Hog deer	<i>Cervuo oryzeus</i>	
Musk deer	<i>Moschus moschiferus</i>	Kastura
Sambhar	<i>Cervus unicolor</i> , nigar	Jarao
<u>(ix) Rodents</u>		
Common Indian Hare	<i>Lepus nigricollis</i>	Khargosh
Large red flying Squirrel	<i>Petaurista petaurista</i>	Koryal
Indian crested porcupine	<i>Hystrix indica</i>	Sehi
Common house rat	<i>Rattus rattus</i> , Linn.	Chuha
House mouse	<i>Mus musculus</i> Linneaus	Musco
Indian Antelope rat	<i>Tatera indica</i> , Hardwicke	„
Short tailed mole rat	<i>Nesokia indica</i> , Gray and Hardwicke	„
Himalayan marmot	<i>Marmot bobak</i> , Mueller	„
Hill mouse	<i>Mos homourus</i>	
<u>(x) Monkey and Langooors</u>		

Himalayan langur	<i>Presbytis entellus</i>	Guni
Monkey	<i>Macac malatta</i>	Bander
(xi) Insectivores		
Gray musk shrew	<i>Suncus murinus</i>	Chuchundar
(xii) Bats		
The allied horse shoe bat	<i>Rhinolophus affinis</i>	Chamgadar
(B) BIRDS		
(a) GAME BIRDS		
(i) Pheasants and fowls group		
Cheer pheasant	<i>Catreus wallichii</i> , Hardwicke	Cheer
Jungle fowl	<i>Gallus gallus Murghi</i> Rohinson & Khoss	Jungli murghi
The white crested pheasant	<i>Lophura leucomelans</i> Latham	Kaleej/ kala murga
Koklas, Medium tailed Himalayan pheasant	<i>Pucrassia macrolopha</i> , Lesson	Kokla
Monal Pheasant	<i>Lophophorus impeyanus</i>	Monal
Western Tragopan	<i>Tragopan melanocephalus</i>	Jejurana
(ii) Partridge and quail group		
Button quail	<i>Turinix taki</i> , Blyth	„
Jungle bush quail	<i>Perdica asiatica</i>	„
Chak or partridge	<i>Alectoris graeca</i> , meisner	Chakor
Black Breasted or rain quail	<i>Coturnix coromandelica</i> Gemelin	Chinak bater
Snow partridge	<i>Lerwa lerwa</i> . Hodgson	Gunguria
Black partridge	<i>Francolinus francolinus</i> . Linnaeus	Kala Titar
Himalayan or wood partridge	<i>Arborophila torqueola</i> Valenciennes	Peora
Snow cock	<i>Tetraogallus tibetanus</i> G.R.Gray	Ram chakor
(iii) Doves and pigeon group		
Spotted dove	<i>Streptopelia chinensis</i>	Chitter fakhta
Rufous turtle dove	<i>Streptopelia orientalis</i> Lathaam	Ghugti
Ring Tailed dove	<i>Streptopelia decaocto</i>	„
Common green pigeon	<i>Treron phoenicopterus</i>	Harial
Wedge tailed green pigeon	<i>Treron apticauda</i>	
Blue rock pigeon	<i>Columba livia</i> . Gamelin	Kabutar
Pin tailed green	<i>Treron apicauda</i> . Blyth	Malya
Snow pigeon	<i>Columba leuconota</i> . Vigor	Safed Malya
(b) NON- GAME BIRDS		
(i) Crows, king crows, tree pies Magpies, Jays and nut crackers		
Himalayan nut cracker	<i>Nucifraga carvocatactes</i>	Pathphor
Jungle crow	<i>Corvus</i> <i>macrorhynchos</i> , Walger	Kawa
Himalayan red crowned	<i>Carrulus glandarius</i> , Linnaeus	Lal kanth
Red billied blue magpie	<i>Kitta erythrophyncha</i> ,	Lampuchhia

	Boddaert	
Himalayan tree pie	<i>Dendroecitta fromosea</i> , Swinhoe	„
Blue throated jay	<i>Garrulus lanceolatus</i> , Vigors	Neel kanth
(ii) Vultures, Eagles, Kites and Falcons		
Black Hobby falcon Kastonal Falcon	<i>Ictinaetus malayensis</i> , Tamminck	Cheel
Panish Kite	<i>Milvus migrans</i> , Boddaert	„
Brahminy kite	<i>Haliaster indus</i> , Boddaert	„
Golden eagle	<i>Aquila chryaetos</i> , Hodgsoni	„
Hawk eagle		„
Tawny eagle		„
Himalayan griffon vulture	<i>Gyps himalayensis</i> , Hume	Gidh
Lammergeier or beards vulture	<i>Gypaetus barbatus</i> Linnaeus	Gidh
King vulture	<i>Torgos alyus</i>	„
White backed vulture	<i>Gopaetus bengalensis</i>	„
Scavenger vulture	<i>Neophron perenopherus</i>	„
(iii) Owls and night jars		
Himalayan wood owl	<i>Strixaluco nivicola</i> , Idnnaus	Uloo
Scully's wood owl Horned owl	<i>Strixaluco biddhphi</i>	„
Himalayan batred owl	<i>Glaucidium cuculoides</i>	„
Lolng tailed night jar	<i>Caprimulgus macrourus</i>	—
Franklings night jar	<i>Caprimulgus monticolus</i>	—
(iv) Thrushes and babblers		
Whistling thrush	<i>Myophoneus caerulens</i>	Chilar
While throated thrush	<i>Garrulax albogularis</i> .Gould	„
Variegated thrush	<i>Garrulax varisgatum</i> , Vigors	„
Red backed thrush	<i>Garrulax erythrocephalus</i> Vigors	„
streaked thrush	<i>Garrulax striatus</i> , Vigors	„
Jungle babbler	<i>Turodoides striatus</i>	„
(v) Fly catchers		
Sooty fly catcher	<i>Hemochslidon silbrica</i>	
White browed blue fly catcher	<i>Muscicapula surperciliaris</i>	
White billied blue fly catcher	<i>Muscicapula pallipos</i>	
Blue throated fly catcher	<i>Muscicapula Rebecoloides</i> , Vigors	
Rufous bellied niltava	<i>Niltava sundara</i>	
(vi) Finches, sparrows and buntings		
Rose finch	<i>Carpodacus erythrins</i> , Pallas	Tuti
Himalayan gold finch	<i>Carduelis carduellis</i> linnaeus	Surja
Himalayan tree finch	<i>Cardelis spinoides</i> , Vigors	Surja
Common house sparrow	<i>Passer domesticus</i> Linnaeus	Gauriyya, Chirya
Cinnamon tree sparrow	<i>Passer rutilans</i> Temminck	Gauriyya, Chirya
Created bunting	<i>Melophus lathanfi</i> , Gray	Rather Chirta
White capped bunting	<i>Eperza stewarti</i> , Blyth	
(vii) Wood Peckers, Tree Creepers and Barbets		
Scaly bellied wood pecker	<i>Picus squamatus</i> , Vigors	Kathphorwa

Himalayan pied wood pecker	<i>Cryobates himalayasis</i>	„
Brown fronted pied wood Pecker	<i>Dryobates auriceps</i>	„
Himalayan tree creeper	<i>Certhia himalayana</i>	„
Himalayan barbet	<i>Mogalaima virens</i> , Boddaert	
Green barbet	<i>Megalaime viridis</i>	
(viii) Birds along water courses		
White capped red start	<i>Chaimarrornis laucocephalus</i>	
Plumbeous red start	<i>Rhyacornis fuliginosus</i>	
Spotted fork tail	<i>Enicurus maculates</i>	
Himalayan pied king fisher	<i>Ceryle lugubris</i>	
(ix) Others		
Red vented bulbul	<i>Molpastes cafer</i>	Bulbul
White cheeked bulbul	<i>Milpastes leucoganys</i>	„
Yellow cheeked bulbul	<i>Macholophus xantogenus</i>	
Gray tit	<i>Paras major</i>	
Black tit	<i>Lophopharrens ruformuchalis</i>	
Pied bush chat	<i>Saxicola caprata</i>	
Common house swallow	<i>Hirundo rustica</i>	
Parakeet	<i>Psittacula himalayana</i>	Tota
Gray hornbill	<i>Dichoceras bicornis</i>	
Swift	<i>Chaetura caudatus</i>	
Blue bearded bee eater	<i>Alcemerops althertoni</i>	
Black headed shrike	<i>Lanius nigriceps</i>	
C) REPTILES		
(i) Snakes		
Rat snake	<i>Ptyas mucosus</i> , Cope	Dhaman
Krait	<i>Bungarus caeruleus</i> , Daud	Krait
Indian cobra	<i>Naja naja</i> , Schleg	Kobra, Nag
Himalayan pit viper	<i>Ancistrodon himalayanus</i> Gunther	Sapp
(ii) Lizards		
Common house gecko	<i>Himidactylus brooki</i> , Gray	Chhipkali
Common lizard	<i>Agama tuberculata</i> , gray	„
Common Indian monitor Lizard	<i>Varanus monitor</i> , Linnaeus	„
(D) FISHES		
-	<i>Barbus tor</i> , Hamilton	Mahaseer
-	<i>Labeao calbasu</i>	Kala Bans
Rishala	<i>Orcinus sinautus</i>	Rishala

ABBREVIATION	
ACF	Assistant Conservator of Forests
APO	Annual Plan of Operations
AIR	All India Reporter
AR/ANR	Artificial Regeneration/ Aided Natural Regeneration
AWPO	Assistant Working Plan Officer
Addl. Pr. CCF	Additional Principle Chief Conservator of Forests
BCD	Biodiversity Conservation and Development
BPs	Boundary Pillars
CCF	Chief Conservator of Forests
CF	Conservator of Forests
CAMPA	Compensatory Afforestation Fund Management and Planning Authority
CASFoS	Central Academy for State Forest Services.
CAT Plan	Catchment Area Treatment Plan
CWP	Civil Writ Petition
CAI	Current Annual Increment
DBH	Diameter at Breast Height
DCF	Deputy Conservator of Forests
DFO	Divisional Forest Officer
DGF & SS	Director General of Forests and Special Secretary
DSMs	Defence Series Maps
DPF	Demarcated Protected Forest
DKWC	Deodar Kail Working Circle
DM	Divisional Manager
EC	Environmental Clearance
EPA	Environment Protection Act
FCA	Forest (Conservation) Act
FDA	Forest Development Agency
Fgd	Forest Guard
FSWC	Fir Spruce Working Circle
FSI	Forest Survey of India
FRA	Forest Rights Act, 2006 {Scheduled Tribes & other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006}
FRI	Forest Research Institute
GCS	Geographic Co-ordination System
GHGs	Green House Gases
GIM	Green India Mission
GPS	Global Positioning System
GoHP	Government of Himachal Pradesh
GoI	Government of India
GDP	Gross Domestic Product
GIS	Geographic Information Systems

GSDP	Gross State Domestic Product
HoD	Head of Department
HoFF	Head of Forest Force
HPSFDC Ltd	Himachal Pradesh State Forest Development Corporation Limited
ICFRE	Indian Council of Forestry Research & Education
IGNFA	Indira Gandhi National Forest Academy
IFA	Indian Forest Act
IIFM	Indian Institute of Forest Management
ITRF	International Terrestrial Reference Frame
IUCN	International Union for Conservation of Nature
IVI	Importance Value Index
IWDP	Integrated Watershed Development Project
JFPM	Joint Forest Participatory Management
JFM	Joint Forest Management
MAI	Mean Annual Increment
MFP	Minor Forest Produce
MAPs	Medicinal and Aromatic Plants
MAR	Monitoring Assessment and Reporting
MEF	Minister of Environment and Forests
MIS	Management Information System
MODIS	Moderate-resolution Imaging Spectroradiometer
MoEF	Minister of Environment and Forests
MoU	Memorandum of Understanding
MRV	Measuring Reporting and Verification
MNREGA	Mahatma Gandhi National Rural Employment Generation Agency
NFI	National Forest Inventory of Indi
NTFP	Non-timber Forest Produce
NGO	Non-Governmental Organization
NREGA	National Rural Employment Generation Agency
NRSC	National Remote Sensing Centre
NPCC	National Plan in Climate Change.
NTCA	National Tiger Conservation Authority
NWFP's	Non- Wood Forest Products
OWC	Oak Working Circle
Pr. CCF	Principal Chief Conservator of Forests
PB	Periodic Block
PES	Payment for Environment Services
PFM	Participatory Forest Management
PWC	Protection Working Circle
Pl.WC	Plantation Working Circle
PWPR	Preliminary Working Plan Report
RAPCCF	Regional Additional Principal Chief Conservator of Forests
RBA	Relative Basal Area

RBAFs	Relative Basal Area Frequencies
RD	Relative Density
REDD	Reducing Emission from Deforestation and Forest Degradation
RET	Rare , Endangered and Threatened
RF	Reserve Forests
RFO	Range Forest Officer
RSD	Road Side Depot
SFM	Sustainable Forest Management
SFR	State of Forest Report
SOI	Survey of India
SLUB	State Land Use & Waste Land Development Board
SPCB	State Pollution Control Board
SCC	Supreme Court Cases
SLP	Special Leave Petition
TD	Timber Distribution
TOF	Trees Outside Forest
UF	Unclassified Forest
UNFCCC	United Nations Framework Convention on Climate Change
UPF's	Un-demarcated Protected Forests
VFDCS	Village Forest Development Committees
WC	Working Circle
WLPA	Wild Life (Protection) Act
WP	Working Plan
WPO	Working Plan Officer

ANNI FOREST DIVISION

Statistics at a Glance

1.	Total Geographical area of the tract	715 Km ²
2.	Forest area (RF, DPF & Listed UPF)	53699.50 Ha.
3.	Percentage of forest area to the total Geographical area	75%
4.	Legal status of Forest area: -	
	i) Indian Forest Act, 1927	
a)	Reserved Forests	2076.04 Ha.
b)	Demarcated Protected Forests(I and II Class)	23210.98 Ha.
c)	Listed Un-demarcated Protected Forests	28412.50 Ha.
	c) Village Forests	NIL
	ii) Forest Conservation Act, 1980	
a)	Reserved Forests	2076.04 Ha.
b)	Protected Forests (i.e. Demarcated Protected Forests)	23210.96 Ha.
c)	Village Forests	NIL
d)	Listed Un-demarcated Protected Forests	28412.50 Ha.
e)	Other Land (Private, Revenue lands etc.)	17814.89

4. Percentage of Forest area under Reserved, I&II Class Demarcated Protected Forests and III Class listed Un-demarcated protected Forests.

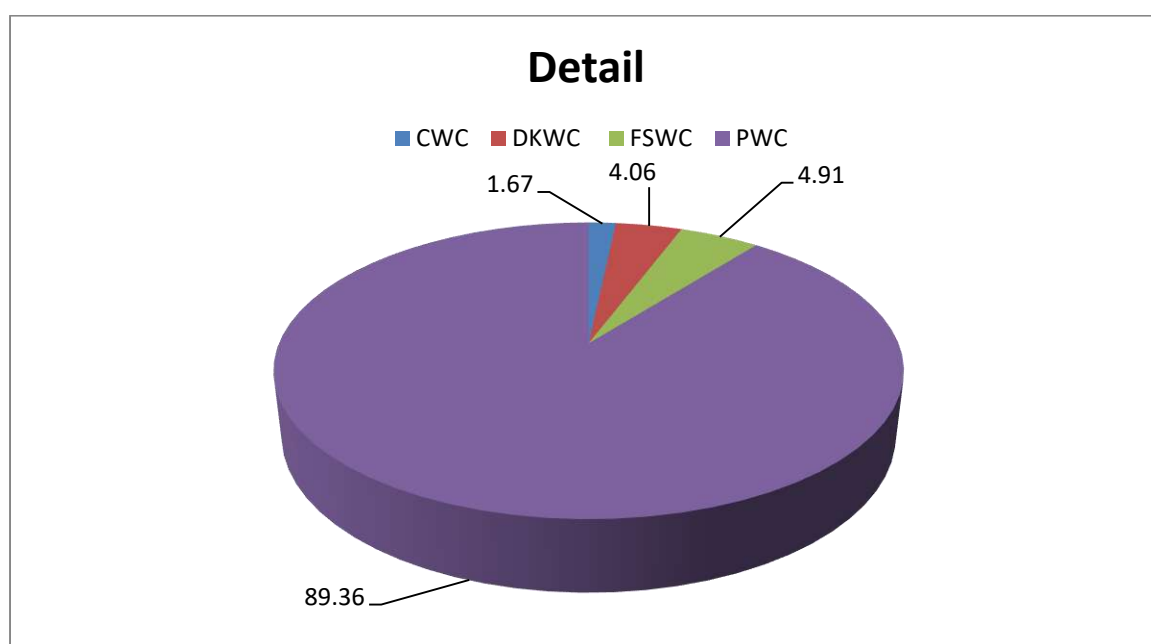
Category of Forests	% age to Forest area	% age to Geographical area
Reserved Forests	3.87	2.90
I & II Class Demarcated Protected Forests	43.22	32.46
III Class listed Un-Demarcated Protected Forests	52.91	39.73
Other Land (Private, Revenue lands etc.)	-	24.91

5. Graphical Representation of category of Forests

Area by Working Circle

Sr. No.	Working Circle	Total area (ha.)	% age to total Divisional Forest area
1	Deodar/Kail Working Circle	2182.13	4.06
2	Fir/Spruce Working Circle	2635.32	4.91
3	Chil Working Circle	897.19	1.67
4	Protection Working Circle	47984.86	89.36
	Total	53699.50	

Working circle wise % of area



6. Species wise and Working circle wise Growing Stock (volume in M³)

Sr. No.	Species Code No	Botanical Name	Common / Local Names	Deodar/Kail Working Circle	Fir/Spruce Working Circle	Chil Working Circle	Protection Working Circle	Total
1	241	<i>Cedrus deodara</i>	Deodar	692967.65	101907.50	1204.35	2070021.43	2866100.93
2	926	<i>Pinus wallichiana</i>	Kail	114304.55	23377.77	32.73	844221.21	981936.26
3	929	<i>Pinus roxburghii</i>	Chil	10027.90	0.00	155935.99	1298856.46	1464820.35
4	2	<i>Abies pindrow</i>	Fir	32756.53	514742.79	0.00	426667.75	974167.06
5	921	<i>Picea smithiana</i>	Spruce	130103.77	1122960.64	0.00	3990182.45	5243246.87
6	1162	<i>Taxus baccata</i>	Taxus	5540.47	9563.66	0.00	10670.24	25774.38
7	965	<i>Prunus cornata</i>	Bird cherry	2479.82	3400.48	0.00	4355.55	10235.85
8	19	<i>Acer acuminatum</i>	Maple	602.16	0.00	0.00	29154.35	29756.52
9	651	<i>Juglans regia</i>	Walnut	14556.50	2166.50	0.00	97210.51	113933.51
10	38	<i>Aesculus indica</i>	HC Nut	555.64	10943.84	0.00	53388.13	64887.61
11	1010	<i>Quercus incana</i>	Ban oak	715.51	8218.16	0.00	361445.25	370378.91
12	1006	<i>Quercus dilatata / floribunda</i>	Mohru Oak	14165.49	0.00	0.00	474408.42	488573.92
13	1017	<i>Quercus semecarpifolia</i>	Kharshu Oak	0.00	15548.81	0.00	30097.01	45645.82
14	0992	<i>Pyrus pashia</i>	Kainth	0.00	0.00	0.00	2771.20	2771.20
15	62	<i>Alnus species</i>	Alnus (Kunish)	0.00	0.00	0.00	266.90	266.90
16	1038	<i>Rhododendron aeboreum</i>	Rhododendron	1424.35	1320.09	555.29	156078.57	159378.30
17	1047	<i>Robinia pseudocacia</i>	Robinia	0.00	0.00	0.00	2402.08	2402.08
18	433	<i>Eucalyptus species</i>	Safeda	0.00	0.00	0.00	92040.07229	92040.07
19	2000	<i>Unidentified and Uncoded Tree</i>	Other B/L	426.80	168.01	0.00	103641.62	104236.43
			G Total	1020627.15	1814318.25	157728.36	10047879.20	13040552.96

7. Working Circle wise total number of trees

Sr. No.	Species Code No	Botanical Name	Common / Local Names	Deodar / Kail Working Circle	Fir / Spruce Working Circle	Chil Working Circle	Protection Working Circle	Total
1	241	<i>Cedrus deodara</i>	Deodar	532980	64789	5102	2612194	3215063
2	926	<i>Pinus wallichiana</i>	Kail	88296	26660	546	1530405	1645907
3	929	<i>Pinus roxburghii</i>	Chil	14277	0	229794	3512265	3756336
4	2	<i>Abies pindrow</i>	Fir	10796	142561	0	207272	360629
5	921	<i>Picea smithiana</i>	Spruce	67079	400144	0	1337330	1804552
6	1162	<i>Taxus baccata</i>	Taxus	8503	22395	0	48269	79166
7	965	<i>Prunus cornata</i>	Bird cherry	3384	5227	0	17036	25647
8	19	<i>Acer acuminatum</i>	Maple	860	0	0	45429	46290
9	651	<i>Juglans regia</i>	Walnut	2495	1444	0	36911	40851
10	38	<i>Aesculus indica</i>	HC Nut	416	2681	0	17036	20133
11	1010	<i>Quercus incana</i>	Ban oak	2524	8043	0	363436	374003
12	1006	<i>Quercus dilatata / floribunda</i>	Mohru Oak	6022	0	0	386150	392172
13	1017	<i>Quercus semecarpifolia</i>	Kharshu Oak	0	23027	0	31233	54260
14	0992	<i>Pyrus pashia</i>	Kainth	0	0	0	11357	11357
15	62	<i>Alnus species</i>	Alnus (Kunish)	0	0	0	2839	2839
16	1038	<i>Rhododendron aeboreum</i>	Rhododendron	4009	3232	1837	258380	267458
17	1047	<i>Robinia pseudocacia</i>	Robinia	0	0	0	25554	25554
18	433	<i>Eucalyptus species</i>	Safeda	0	0	0	400347	400347
19	2000	Unidentified and Uncoded Tree	Other B/L	846	1787	0	164682	167315
			G Total	742487	701989	237279	11008124	12689879

8. Working circle wise Growing stock per ha. (in M3)

Sr. No.	Species Code No	Botanical Name	Common / Local Names	Deodar/Kail Working Circle	Fir/Spruce Working Circle	Chil Working Circle	Protection Working Circle	Total
1	241	<i>Cedrus Deodara</i>	Deodar	1693.26	102.02	2.48	729.05	2526.81
2	926	<i>Pinus wallichiana</i>	Kail	277.91	44.24	0.06	297.33	619.54
3	929	<i>Pinus roxburghii</i>	Chil	23.87	0.00	390.4	457.45	871.72
4	2	<i>Abies pindrow</i>	Fir	75.67	526.76	0.00	150.27	752.70
5	921	<i>Picea smithiana</i>	Spruce	310.46	1061.88	0.00	1405.32	2777.66
6	1162	<i>Taxus baccata</i>	Taxus	13.14	8.02	0.00	3.76	24.92
7	965	<i>Prunus cornata</i>	Bird cherry	5.86	2.85	0.00	1.53	10.24
8	19	<i>Acer acuminatum</i>	Maple	1.40	0.00	0.00	10.27	11.67
9	651	<i>Juglans regia</i>	Walnut	35.00	1.50	0.00	34.24	70.74
10	38	<i>Aesculus indica</i>	HC Nut	1.34	12.25	0.00	18.80	32.39
11	1010	<i>Quercus incana</i>	Ban oak	1.98	9.20	0.00	127.30	138.48
12	1006	<i>Quercus dilatata / floribunda</i>	Mohru Oak	32.93	0.00	0.00	167.08	200.02
13	1017	<i>Quercus semecarpifolia</i>	Kharshu Oak	0.00	23.24	0.00	10.60	33.84
14	0992	<i>Pyrus pashia</i>	Kainth	0.00	0.00	0.00	0.98	0.98
15	62	<i>Alnus species</i>	Alnus (Kunish)	0.00	0.00	0.00	0.09	0.09
16	1038	<i>Rhododendron aeboreum</i>	Rhododendron	3.38	1.30	2.418	54.97	62.07
17	1047	<i>Robinia pseudocacia</i>	Robinia	0.00	0.00	0.00	0.85	0.85
18	433	<i>Eucalyptus species</i>	Safeda	0.00	0.00	0.00	32.42	32.42
19	2000	Unidentified and Uncoded Tree	Other B/L	1.00	0.19	0.00	36.50	37.69
			G Total	2477.20	1793.44	395.36	3538.81	8204.80

9. Working Circle wise total number of trees per hac. (in numbers)

Sr. No.	Species Code No	Botanical Name	Common / Local Names	Deodar/Kail Working Circle	Fir/Spruce Working Circle	Chil Working Circle	Protection Working Circle	Total
1	241	<i>Cedrus deodara</i>	Deodar	1309	70	10	920	2309
2	926	<i>Pinus wallichiana</i>	Kail	221	48	1	539	809
3	929	<i>Pinus roxburghii</i>	Chil	34	0	618	1237	1889
4	2	<i>Abies pindrow</i>	Fir	26	153	0	73	252
5	921	<i>Picea smithiana</i>	Spruce	161	376	0	471	1008
6	1162	<i>Taxus baccata</i>	Taxus	20	23	0	17	60
7	965	<i>Prunus cornata</i>	Bird cherry	8	4	0	6	18
8	19	<i>Acer acuminatum</i>	Maple	2	0	0	16	18
9	651	<i>Juglans regia</i>	Walnut	6	1	0	13	20
10	38	<i>Aesculus indica</i>	HC Nut	1	3	0	6	10
11	1010	<i>Quercus incana</i>	Ban oak	7	9	0	128	144
12	1006	<i>Quercus dilatata / floribunda</i>	Mohru Oak	14	0	0	136	150
13	1017	<i>Quercus semecarpifolia</i>	Kharshu Oak	0	23	0	11	34
14	0992	<i>Pyrus pashia</i>	Kainth	0	0	0	4	4
15	62	<i>Alnus species</i>	Alnus (Kunish)	0	0	0	1	1
16	1038	<i>Rhododendron aeboreum</i>	Rhododendron	10	3	8	91	112
17	1047	<i>Robinia pseudocacia</i>	Robinia	0	0	0	9	9
18	433	<i>Eucalyptus species</i>	Safeda	0	0	0	141	141
19	2000	Unidentified and Uncoded Tree	Other B/L	2	2	0	58	62
			G Total	1821	715	637	3877	7050

10. Working Circle wise prescribed annual yield (in M3)

Species	Deodar/Kail			Fir/Spruce			Chil			Protection	G. Total of yield (In m3)
	PB-I	PB-IV	Total	PB-I	PB-IV	Total	PB-I	PB-IV	Total		
Deodar	5094	4195	9289	245	175	420	0	10	10		9719
Kail	2675	615	3290	460	0	460	0	0	0		3750
Fir	790	715	1505	2180	100	2280	0	0	0		3785
Spruce	2425	1415	3840	3485	1085	4570	0	0	0		8410
Chil	133	0	133	0	0	0	922	740	1662		1795
Total	11117	6940	18057	6370	1360	7730	922	750	1672	Yield not prescribed	27459

11. Comparative Chart for comparison of present prescription with that given for working circle in Previous Working plan and its analysis

Sr. No	Heading	Prescriptions					Analysis/Remarks						
		Negi's Working Plan					Current Working Plan						
	Division & Ranges	Kotgarh & Rampur					Anni				Before 1999 in Negi's plan the Chowai and Nither Ranges were in Kotgarh Forest Division and Arsu Range was in Rampur Forest Division. The Ani Forest Division came into existence on 31 st May, 1999 with headquarter at Luhri under the control of Conservator of Forests, Kullu, Distt. Kullu HP. Later on, 28 th April, 2003, the control of this Division was brought under the jurisdiction of Rampur Forest Circle.		
	Distribution of Area										In the current plan the area has been calculated by GIS Cell, Mist Chamber, Khalini Shimla, Himachal Pradesh and the copy of the same is annexed as <i>Appendix-XXXVI</i> .		
		Name of Range	Reserve Forest (RF) (In Ha.)	Protected Forests (In Ha.)		G. Total	Name of Range	Reserve Forest (RF) (In Ha.)	Protected Forests (In Ha.)			G. Total	
				DPF I & II	III Class Listed UPFs				DPF I Class	DPF II Class		III Class Listed UPFs	
		Arsu	1875.72	13420.21	9432.82	24728.75	Arsu	1875.72	2223.76	11196.45	9732.72	25028.65	

		<table><tr><td>Chowai</td><td>185.35</td><td>2245.2</td><td>9580.84</td><td>11841.01</td></tr><tr><td>Nither</td><td>14.97</td><td>7545.36</td><td>9201.89</td><td>16932.60</td></tr><tr><td>G.Total</td><td>2076.04</td><td>23210.77</td><td>28215.55</td><td>53502.36</td></tr></table>	Chowai	185.35	2245.2	9580.84	11841.01	Nither	14.97	7545.36	9201.89	16932.60	G.Total	2076.04	23210.77	28215.55	53502.36	<table><tr><td>Chowai</td><td>185.35</td><td>2580.18</td><td>4965.19</td><td>9198.94</td><td>16929.66</td></tr><tr><td>Nither</td><td>14.97</td><td>1786.47</td><td>458.91</td><td>9480.84</td><td>11741.19</td></tr><tr><td>G.Total</td><td>2076.04</td><td>6590.41</td><td>16620.55</td><td>28412.5</td><td>53699.5</td></tr></table>	Chowai	185.35	2580.18	4965.19	9198.94	16929.66	Nither	14.97	1786.47	458.91	9480.84	11741.19	G.Total	2076.04	6590.41	16620.55	28412.5	53699.5	
Chowai	185.35	2245.2	9580.84	11841.01																																	
Nither	14.97	7545.36	9201.89	16932.60																																	
G.Total	2076.04	23210.77	28215.55	53502.36																																	
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G.Total	2076.04	6590.41	16620.55	28412.5	53699.5																																
	Rights and Concessi ons	➤ Requirement of right holders as per settlement provisions	➤ The demand of right holders will be met as per provision of settlement report and as per revised timber distribution policy Notified by HP Govt. in the year 2013 amended 2016.	➤ Due to ban on green felling, no green trees are granted to the right holders. ➤ The GoHP framed Timber Distribution policy to the right holders during 2013 and further amended 2016. ➤ Now the right holder demand is met as per amended TD Policy 2016.																																	
	Fuel wood Depot	➤ The right holders are entitled to collect fuel wood free of charges from the forests as per recorded rights in settlement.	➤ The right holders are entitled to collect fuel wood free of charges from the forests as per recorded rights in settlement. ➤ The local inhabitants of the tract can purchase fuel wood from Fuel wood sale depot at Anni	➤ The new fuel wood Sale depot registered/ established on 13.10.2015 and is being run by Himachal Pradesh State Forest Development Corporation.																																	
	Encroach ment	➤ Only 373 No.s of encroachment cases detected from 1996-97 to 2011-12	➤ Total No.s of encroachment cases above 10 bigha are 50 in number and measuring 61.8762 Bigha in extent. 1340 no. of	➤ The detail is given in table No. 1.10 & 1.11 for																																	

			encroachment cases are of below 10 bigha area measuring 454.3962 Bigha in total. These cases have been detected from the year 2012 to 2019-20.	encroachments below 10 bigha and above 10 bigha respectively.
	Recent development	➤ Nil	➤ New activities like MGNREGA ➤ Green India Mission ➤ Scheduled Tribes & other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 ➤ Forest-PLUS Programme ➤ Ek Buta Beti Ke Naam ➤ Vidyarthi Van Mitra Yojna ➤ Van Samridhi – Jan Samridhi ➤ Samudayik Van Samvardhan Yojana:	➤ Detailed described under Para No. 1.26 of Chapter -1.
	New Chapters	➤ Nil	➤ Activities of HP State Forest Development Corporation Ltd. in harvesting and marketing of forest produce. ➤ Five year plan	➤ New Chapters described in detail in Part-1 of the current Working Plan as per new working plan Code 2014.
	Forest Fauna	➤ Only one chapter named :- The Forest (The Flora & Fauna)	➤ Separate Chapter on Forest Flora and Forest Fauna.	➤ The detail is described under separate chapter IIA & IIB ➤ Detailed monkey census carried out during the year 2015 & 2019 and given in

				table No. 2B.2 & 2B.3 respectively.
	Enumera tion	• The total enumeration carried out in PB-I and PB-IV area. • Partial enumeration carried in other PBs	• As per National Working Plan Code, 2014 the enumeration was carried out on the grid system basis in the Sample IDs (Plots) of size 0.1 Ha each.	➤ The whole of the area of the Anni Forest Division was divided into grids and total 274 Nos. of samples were taken. The enumeration was carried out with the help of Garmin GPS 72, Compass, Haga Altimeter and Callipers. The enumerated data was entered in the Plot Enumeration Form and the description of the plot was entered in Plot Description. Form (<i>Appendix-V</i>). ➤ The class wise enumerated data was then analyzed/ extrapolated to assess the growing stock of Deodar-Kail Working Circle, Fir/Spruce Working Circle, Chil Working Circle &

																	Protection Working Circle.					
	Constituti ion of Working circles	➤ The Deodar- Kail Working Circle. ➤ The Fir/Spruce Working Circle. ➤ The Chil Working Circle. ➤ The Protection Working Circle ➤ The Improvement Circle							➤ The Deodar- Kail Working Circle. ➤ The Fir/Spruce Working Circle. ➤ The Chil Working Circle. ➤ The Protection Working Circle. ➤ The Eucalyptus Plantation (Overlapping) Working Circle. ➤ The Plantation (overlapping) Working Circle. ➤ The NTFP (overlapping) Working Circle. ➤ The Forest Protection overlapping Working Circle (Overlapping to all working circle, viz Fire, Illicit felling, Encroachment, Illegal mining and Poaching etc.). ➤ The Joint Forest Management/ Participatory Forest Management (overlapping) Working Circle. ➤ The Wild life Management (overlapping) Working Circle.							➤ The detail given under chapter 1 of the Part-II.						
		Working circle, their area and distributi on	Name of Range	DKW C (Hac.)	FSW C (Hac.)	CWC (Hac.)	PWC (Hac.)	Imp. WC	G. Total (Hac.)	Name of Range	DKW C (Hac.)	FSWC (Hac.)	CWC (Hac.)	PWC (Hac.)	G. Total (Hac.)	➤ The variation is on account of the area calculated by GIS Cell, Mist Chamber, Khalini Shimla, Himachal Pradesh.						
	Arsu		366.23	647.49	433.01	13849.20	9432.82	24728.75	Arsu	366.23	647.49	433.01	23581.92	25028.65								
	Chowai		1291.64	1598.52	393.76	4446.79	9201.89	16932.6	Chowai	1291.64	1598.52	393.77	13645.73	16929.66								
	Nither		524.08	389.31	70.41	1276.37	9580.84	11841.01	Nither	524.26	389.31	70.41	10757.21	11741.19								
	Total		2181.95	2635.32	897.18	19572.36	28215.55	53502.36	Total	2182.13	2635.32	897.19	47984.9	53699.50								
	Period of Working		• 15 years							• 10 years							➤ As per working plan period 2014.					

	Plan												
	Forest Block	11 Blocks				12 Blocks				A new block named Moin has been carved out from Nither and Dalash Block.			
	Name of Working Circle	Deodar Kail Working Circle											
	Felling cycle	15 Years				30 years				The felling cycle of 30 years corresponding to the regeneration period, in view of the silvicultural requirements.			
	Prescribed Annual yield		Species	PBI	PBIV	Total		Species	PBI	PBIV	Total	The variation is on account of complete moratorium on green felling.	
			Deodar	2400	3400	5800		Deodar	5094	4195	9289		
			Kail	1700	400	2100		Kail	2675	615	3290		
			Fir/spruce	2000	1200	3200		Fir	790	715	1505		
			Chil	90	15	105		Spruce	2425	1415	3840		
			Total	6190	5015	11205		Chil	133	0	133		
								Total	11117	6940	18057		
	Control of Yield	Control of Yield for year, as period of 5 year and plan period should not exceed +10% of the annual prescribed yield.				The control of yield and the deviation for a year, a period of five year and a plan period shall not exceed +25%,+10% and ±05% respectively.				The detail described in chapter No. II under para No. 2.18			
	Planting Programme	Yield prescribed from the forest areas is directly proportional to area planted.				Planting programme prescribed				The detailed planting			

	Regeneration Period	25 YEAR	30 year				The detail described in chapter No. IV under para No. 4.11																																					
	Exploitable diameter	50 cm dbh	60 cm dbh				The detail described in chapter No. IV under para No. 4.13																																					
	Rotation period	100 years	120 years				The detail described in chapter No. IV under para No. 4.12																																					
	Felling cycle	15 year	30 years				The detail described in chapter No. IV under para No. 4.14																																					
	Prescribed Annual yield	<table><tr><td>Species</td><td>PBI</td><td>PBIV</td><td>Total</td></tr><tr><td>Deodar</td><td>20</td><td>5</td><td>25</td></tr><tr><td>Kail</td><td>5</td><td>6</td><td>11</td></tr><tr><td>Chil</td><td>500</td><td>600</td><td>1100</td></tr><tr><td>Total</td><td>525</td><td>611</td><td>1136</td></tr></table>	Species	PBI	PBIV	Total	Deodar	20	5	25	Kail	5	6	11	Chil	500	600	1100	Total	525	611	1136	<table><tr><td>Species</td><td>PBI</td><td>PBIV</td><td>Total</td></tr><tr><td>Deodar</td><td>0</td><td>10</td><td>10</td></tr><tr><td>Kail</td><td>0</td><td>0</td><td>0</td></tr><tr><td>Chil</td><td>922</td><td>740</td><td>1662</td></tr><tr><td>Total</td><td>922</td><td>750</td><td>1672</td></tr></table>	Species	PBI	PBIV	Total	Deodar	0	10	10	Kail	0	0	0	Chil	922	740	1662	Total	922	750	1672	The variation is on account of complete moratorium on green felling.
Species	PBI	PBIV	Total																																									
Deodar	20	5	25																																									
Kail	5	6	11																																									
Chil	500	600	1100																																									
Total	525	611	1136																																									
Species	PBI	PBIV	Total																																									
Deodar	0	10	10																																									
Kail	0	0	0																																									
Chil	922	740	1662																																									
Total	922	750	1672																																									
	Resin Tapping	Prescribed as cup and lip method/rill method	Prescribed as per rill method				The detail described in chapter No. IV under para No. 4.22																																					

	Consolidated working circle wise prescribed yield.	Working Circle wise total prescribed annual yield (in cum. Mtr.)					Working Circle wise total prescribed annual yield (in cum. Mtr.)					➤ The variation is on account of complete moratorium on green felling.		
		Working Circle					Working Circle							
		Species	DKWC	F/S WC	CWC	G.Total of Yield (in cum. Mtr.)	Species	DKWC	F/S WC	CWC	G.Total of Yield (in cum. Mtr.)			
			Total	Total	Total			Total	Total	Total			Total	
		Deodar	5800	0	25	5825	Deodar	9289	420	10	9719			
		Kail	2100	0	11	2111	Kail	3290	460	0	3750			
		Fir/Spruce	3200	4700	0	7900	Fir	1505	2280	0	3785			
		Chil	105	0	1100	1205	Spruce	3840	4570	0	8410			
		Total	11205	4700	1136	17041	Chil	133	0	1662	1795			
							Total	18057	7730	1672	27459			
		THE PROTECTION WORKING CIRCLE												
	Area statement	Name of Range	RF	DPF I Class	DPF II Class	Total in Ha.	Name of Range	RF	DPF I Class	DPF II Class	III Class forests (UPF)	Total in Ha.	➤ The variation is on account of transfer of areas from Improvement Working Circle of expire working plan.	
		Arsu	1619.57	1607.03	10622.60	13849.2	Arsu	1619.57	1607.03	10622.60	9732.72	23581.92		
		Chowai	0	139.22	4307.57	4446.79	Chowai	0	139.22	4307.57	9198.94	13645.73		
		Nither	0	918.63	357.74	1276.37	Nither	0	918.63	357.74	9480.84	10757.21		
		Total	1619.57	2664.88	15287.91	19572.36	Total	1619.57	2664.88	15287.91	28412.50	47984.86		
		THE IMPROVEMENT WORKING CIRCLE												
	Constitution of Working circle	All the III class forests constitute the improvement working circle					Nil					➤ No separate chapter proposed in the current working plan.		

		THE EUCALYPTUS (OVERLAPPING) WORKING CIRCLE		
		Nil	This working circle includes the I Class Demarcated Protected and III Class (Un-demarcated Protected Forests) which overlaps with Protection Working Circle.	➤ This working circle has been constituted to meet the increasing demand of fire wood, sawn timber, poles, extraction of essential oil, fence posts etc. ➤ This Working Circle includes predominantly Eucalyptus forests raised during 1960-1970 in the tract of this Division.
		THE MANDATORY WORKING CIRCLES		
	Constitution of	Separate chapters on • Wildlife and its Management • Joint Forest Management	New chapter on ➤ The Plantation (overlapping) Working Circle.	➤ New chapters created as per National Plan Code, 2014 and detail

	Working circle	• Non Timber Forest Produce.	➤ The NTFP (overlapping) Working Circle. ➤ The Forest Protection overlapping Working Circle (Overlapping to all working circle, viz Fire, Illicit felling, Encroachment, Illegal mining and Poaching etc.). ➤ The Joint Forest Management/ Participatory Forest Management (overlapping) Working Circle. • The Wild life Management (overlapping) Working Circle	described under respective chapters.
	THE FOREST AND CLIMATE CHANGE	Nil	• Detail discussed	➤ The Forest and climate change is given in chapter XI+3.
	Carbon stock and carbon sequestration and mitigation	Nil	• Detail discussed	➤ Carbon stock, carbon sequestration and mitigation in chapter XI+2 in para No. XI+2.41

EXECUTIVE SUMMARY

The tract of the Anni Forest Division was re-organized during 31st May, 1999 vide Notification No. FFE-A (A)1-3/98 (Copy of the Notification is annexed as **Appendix-XIX**). Before re-organization in 1999, the control of two Ranges viz Chowai & Nither, was with Kotgarh Forest Division and the Arsu Range was with Rampur Forest Division. Subsequently, this Division came into existence on 5th July, 1999 with headquarter at Luhri under the control of Conservator of Forests, Kullu, Distt. Kullu HP. Later on, the control of this Division was brought under the jurisdiction of Rampur Forest Circle on 28th April, 2003 vide Notification No. FFE-A (A) 1-3/98 (Copy of Notification is annexed as **Appendix-XX**). Now, this Division contains three territorial Ranges viz Arsu, Chowai & Nither. The territorial jurisdiction of the Anni Forest Division falls in civil jurisdiction of Anni, Sub-Division of District, Kullu, H.P.

The total geographical area of this Division is **715 Km²**. The Forests of Anni Forest Division were being managed under Shamsheer Singh Negi's Working Plan before the plan under revision. The salient features of the revised plan are that the Eucalyptus Plantations raised earlier in the year 1960 to 1970 having substantial area under them in UPF have been brought under the scientific management. There are **16** No.s of RFs, **115** No.s of DPFs-I Class, **58** No.s of DPFs- II Class and **178** No.s of listed UPFs. All the total Forests (**367 No.s**) has been listed up on the basis of the composition of the crop and allotted Range wise into respective working circle Govt. waste land i.e. other land as defined by the Supreme Court, which includes Charagah Drakhatan, Charagah Bila Drakhatan, pasture land except Gair Mumkin land, etc. are included in the plan in compliance of the Hon'ble Supreme Court order dated 12-12-1996 for application of Forest (Conservation) Act, 1980, as these Govt. waste lands were declared in general as 'Protected Forests' by the Govt. notification dated 25th February 1952, which were out of the scope of the previous working plan. The Range wise statement of the Forest area is given as under:

Range wise Distribution of the Forest Area (in hac.)

Sr. No.	Name of Range	Reserve Forest (RF) (In Ha.)	Protected Forests (In Ha.)			Others land (Private, Revenue etc.)	G. Total
			DPF I Class	DPF II Class	III Class Listed UPFs		
1	Arsu	1875.72	2223.76	11196.45	9732.72	6619.28	31647.93
2	Chowai	185.35	2580.18	4965.19	9198.94	6620.95	23550.61
3	Nither	14.97	1786.47	458.91	9480.84	4574.66	16315.85
	G.Total	2076.04	6590.41	16620.55	28412.5	17814.89	71514.39

There are no reliable records available which could throw the light on the early history of these Forests. The Forest areas were brought under the scientific management during 1894 when the First Working Plan was prepared by C.P. Fisher, Deputy Conservator of Forests. But no serious attempt was made to secure a regular sustained yield from these Forests. Working of Forests was not done on any scientific lines and felling were haphazard. There are no proper and adequate records to show the nature and extent of felling. The value of Deodar was, however, recognized very early and timber trader had started removing a certain number of selected trees even before government undertook departmental felling during 1864-65. But the methods of working whether for Government purpose or for use of Right Holders were altogether haphazard. All that was done was to make from time to time

very rough estimate of the number of Deodar trees available from Forests and these estimates were sometimes high or low which resulted, the annual exports increased or decreased. There used to be one working plan for whole of Kullu District in the past, till the Fifth working plan prepared by D.P. Kapoor, IFS (1964-65 to 1978-79) for the Forests of Seraj Forest Division and separate Working Plan was also prepared for Kullu Forest Division comprising (Kullu and Parvati Forest Division). Sh. D.P. Kapoor prepared/completed the draft plan and submitted the proposal in 1972-73. The draft plan, however, could not be approved. However, the Forests of Seraj Forest Division were worked under the prescription of Kapoor's Plan but the yield was controlled under Aggarwal's Plan. There was no Working Plan for Seraj Forest Division for the period 1979-80 to 1985-86 and works were executed on the basis of felling programme approved by CCF from time to time. During that period, no major felling was carried out except some thinnings and felling of Fir Forests for the supply of fruit packing cases etc. and also to meet the local demands of Right Holders for Timber Distribution (TD). In the mean time, the control of two Ranges of Seraj Division (viz. Kurpan and Ani) came on 20.04.1985, under the administrative control of Rampur Circle in Rampur and Kotgarh Forest Division. Later on, Nither Range was carved out in 01.06.1984, from erstwhile Kurpan and Anni Ranges by transferring Nither, Margi Block of Kurpan Range and Dalash Block, Tandi Beat of Anni Range respectively. After that separate working plan was prepared for the Forests of Outer Seraj by Sh. Shamsher Singh Negi, IFS for the period 1996-97 to 2011-12 (i.e. for the Satluj felling series of erstwhile Seraj Forest Division).

Prior to 1886 the Forests of the track were worked in an unscientific manner. There were no definite schemes for exploitation or carrying out of the works of reproduction etc. During this period only species of value for export was Deodar only and the traders used to remove a certain number of selected Deodar trees from the Forests. The Govt. of Punjab undertook the departmental felling for the first time in 1864-65. In the absence of proper working plan, all that was done to make time to time the rough estimation about the Deodar trees available for export. Regarding the extent of felling no proper record were maintained. The method of working whether for Govt. purposes or use of right holders was all together haphazard.

15084 number of Deodar trees were marked and felled for export; probably of I class trees w.e.f. 1864-65 to 1896-97. Besides the considerable number of wind fallen trees were also converted and exported. In addition 7511 Deodar trees probably of Ist class were felled from Govt. land for local use w.e.f. 1864-65 to 1896-97, thereby bringing the removal to 22595 Ist class Deodar trees.

There used to be one working plan for whole of kullu District in the past, till the Fifth working plan prepared by D.P. Kapoor IFS (1964-65 to 1978-79) for the Forests of Seraj Forest Division and separate Working Plan was also prepared for Kullu Forest Division comprising (Kullu and Parvati Forest Division). Sh. D.P. Kapoor prepared/completed the draft plan and submitted the proposal in 1972-73. The draft plan, however, could not be approved. However, the Forests of Seraj Forest Division were worked under the prescription of Kapoor's Plan but the yield was controlled under Aggarwal's Plan. There was no Working Plan for Seraj Forest Division for the period 1979-80 to 1985-86 and works were executed on the basis of felling programme approved by CCF from time to time. During that period, no major felling was carried out except some thinnings and felling of Fir Forests for the supply of fruit packing cases etc. and also to meet the local demands of Right Holders for Timber Distribution (TD). In the mean time, the control of two Ranges of Seraj Division (viz. Kurpan and Anni) came under the administrative control of Rampur Circle in Rampur and Kotgarh Forest Division. Later on, Nither Range was carved out in 01.06.1984, from erstwhile Kurpan and Anni Ranges by transferring Nither, Margi Block of Kurpan Range and Dalash Block, Tandi Beat of Anni Range respectively. After that separate working plan was prepared for the

Forests of Outer Seraj by Sh. Shamsher Singh Negi, IFS for the period 1996-97 to 2011-12 (i.e. for the Satluj felling series of erstwhile Seraj Forest Division).

The first detailed working plan was prepared by Sir C.P.Fisher in 1894 for a period of twenty year 1897-98 to 1918-19. Later on, the Forests of this Division were covered in the following working plans as under:-

- i) Sir E.G. Trevor's working plan 1919-20 to 1934-35.
- ii) W.H.G.Samler's working plan 1934-35 to 1949-50.
- iii) Sh. K.L.Aggarwal's working plan 1949-50 to 1963-64.
- iv) Sh. D.P. Kapoor's working plan from 1964-65 to 1978-79.
- v) Sh. Shamsher Singh Negi's working plan from 1996-97 to 2011-12 and extended upto 2014-15.

The detail of each working plans are described in Chapter VII-Past System of Management, Part-I of the working plan.

The present working plan is the revision of Negi's Working Plan from 1996-97 to 2011-12 and extended upto 2014-15. This working plan has been prepared, strictly, on the basis of National Working Plan Code, 2014. In order to, achieve the objects of management outlined in Chapter-I, Part-II, the Deodar- Kail Working Circle, the Fir-Spruce Working Circle, the Chil Working Circle, and the Protection Working Circle have been constituted as per composition of the crop. A separate mandatory working circle i.e. Plantation, NTFP, Forest Protection (Fire, illicit felling, encroachment, illegal mining, poaching etc.) and Joint Forest Management & Wild Life Management overlapping working circles have also been constituted for the first time and discussed in length with prescriptions of legal control mechanism, which would be very useful as reference. The chapter on NTFP gives an exhaustive list of the useful medicinal plants along with their uses, which would be very useful as reference. Similarly, the new chapter on Five Year Plans & Activities of H. P. State Forest Development Corporation Ltd. in harvesting and marketing of Forest produce, result of socio-economic survey too, are in detailed form and described in Part-I Chapter-V and Chapter-IV respectively. The circle wise statement of Forest area is given as under:

Working Circle Wise Statement of the Forest Area (in Hac.)

Sr. No.	Name of Working Circle	Protected Forests (In Ha.)				Total
		RFs	DPFs (I Class)	DPFs (II Class)	III Class Listed UPFs	
1	Deodar-Kail	312.41	1839.37	30.35	0	2182.13
2	Fir/Spruce	144.06	1334.25	1157.01	0	2635.32
3	Chil	0	751.91	145.28	0	897.19
4	Protection	1619.57	2664.88	15287.91	28412.5	47984.86
Total		2076.04	6590.41	16620.55	28412.5	53699.50

As per working plan code 2014, the enumeration was carried out on the grid system bases in the Sample IDs (Plots) of size 0.1 Ha each. The enumerations were carried out, accordingly, in all the PBs down to 10 cms dbh in all the working circles. All the coniferous and important broad leaved species have been included in the enumeration list. The results

have been analyzed and growing stock has been assessed accordingly. The present working plan has been revised thoroughly, notwithstanding, the present moratorium on green felling. The revised working plan includes all regular working circles, prescribing yield and felling cycle/felling series depending on the condition of Forests in each working circles. Thus, green felling in any Forest or in public Forest will be allowed / carried out strictly in accordance with the approved prescriptions of working plan subject to the decision of the Hon'ble Supreme Court.

The Forests allotted to different working circles viz Deodar - Kail, Fir / Spruce & Chil, are prescribed to be managed under the Punjab Shelter Wood System. The rotation period is fixed at 120 Years for Deodar/Kail, Fir/Spruce and Chil. Beside this, the felling cycle of 10 years corresponding to the period of plan has been adopted. The regeneration period of 30 years has been adopted and area of the all working circles has been divided into four periodic blocks i.e. PB-I to PB-IV.

The yield has been calculated by volume and separately for PB-I and IV on the basis of enumeration result in the Deodar / Kail, Fir/Spruce and Chil working circles. The total Annual prescribed yield from the Forests of the different working circles has been worked out by Hufnagels formula and is given in the Table below:

Working Circle wise prescribed annual yield (in M³)

Species	Deodar/Kail			Fir/Spruce			Chil			Protection	G. Total of yield (In m3)
	PB-I	PB-IV	Total	PB-I	PB-IV	Total	PB-I	PB-IV	Total		
Deodar	5094	4195	9289	245	175	420	0	10	10	Yield not prescribed	9719
Kail	2675	615	3290	460	0	460	0	0	0		3750
Fir	790	715	1505	2180	100	2280	0	0	0		3785
Spruce	2425	1415	3840	3485	1085	4570	0	0	0		8410
Chil	133	0	133	0	0	0	922	740	1662		1795
Total	11117	6940	18057	6370	1360	7730	922	750	1672		27459

The methods of executing felling / thinning have also been described alongwith the detailed felling and planting programme. An exhaustive artificial regeneration and miscellaneous regulations are also prescribed under respective working circles. However, all the working circles are described in detail from Chapter II to Chapter XI of Part-II of the working plan. Similarly, miscellaneous regulations in Chapter-XI+2 are also described in detail, which would be useful as reference.

The working circle wise detailed plantation programme has been laid down in Plantation (Overlapping) Working Circle, Chapter-VII, Part-II. It is also pertinent to mention that most of the refractory areas are also proposed for planting in addition to the regular forests where the density is poor, during the plan period, the plantation shall be carried out only after issuance of closure notification under Section 30 (b) of IFA, 1927. Similarly, the land bank area comprising **853.73 hac.** (Plantation already carried out in 756.11 Ha. and Proposed 97.62 Ha.) have been identified and is tabulated in **Table No. 7.5 & 7.6** of the Chapter-VII, Plantation (Overlapping) Working Circle. The identified land bank area for compensatory afforestation in lieu of the Forest land diverted for non-Forestry purpose shall be transferred to the ownership of the Forest department and declared as 'Protected Forests'

under Section 29 of the Indian Forest Act, 1927 and will be added to the total recorded Forest area of the State. It has been observed that large chunk of Forest land consisting of listed UPFs or other Forest land i.e. Charagah Drakhtan, Charagah Bila Drakhtan were covered in the working plan for raising plantation, but, these areas does not come under the preview of IFA, 1927 in absence of notification under Section 29 to 32 of IFA, 1927.

All the relevant Govt. notifications, rules and important judgments are also annexed as Appendices for the ready reference to all.

PART-I

SUMMARY OF FACTS ON WHICH THE PROPOSALS ARE BASED

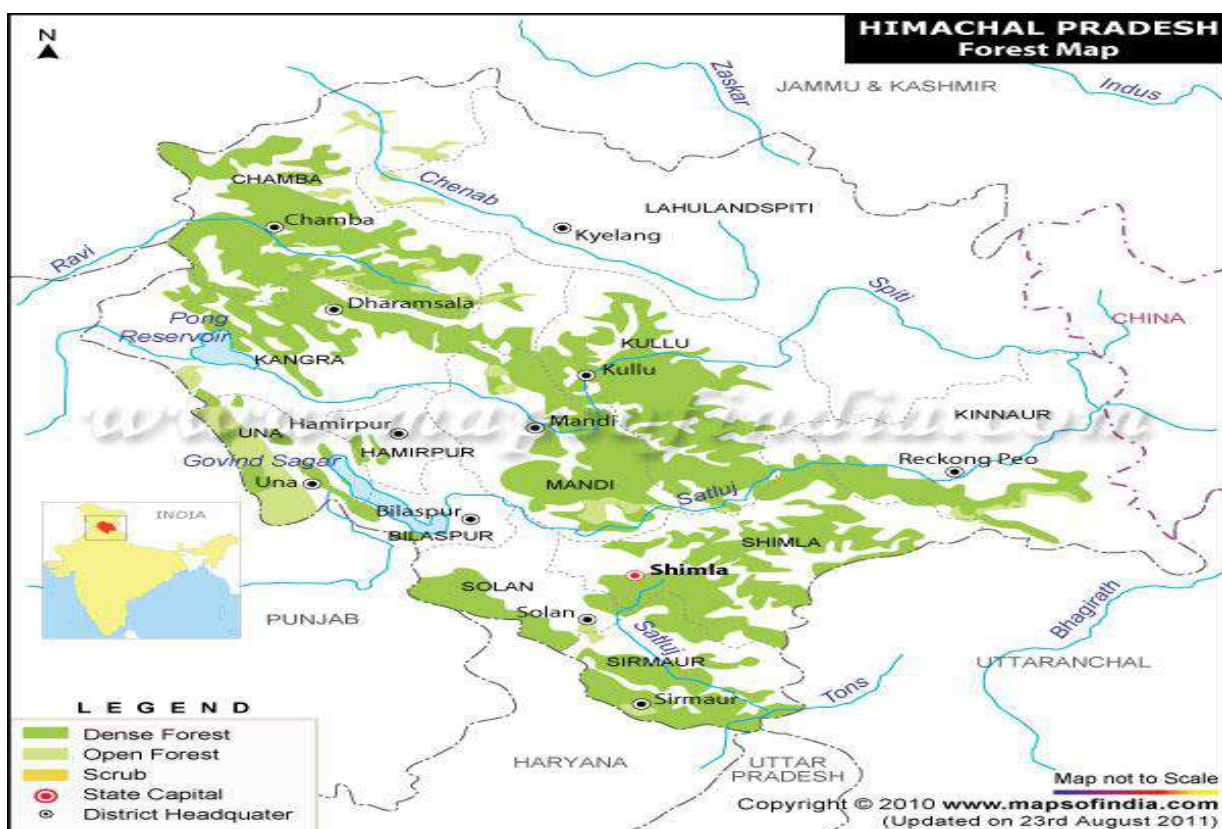
CHAPTER-I

THE TRACT DEALT WITH

1.1 Name and Situation:

This Working Plan deals with all the protected Forests i.e. Reserve, Demarcated (I&II Class) and III Class Listed Un-demarcated Protected Forests including other land of Anni Forest Division. The Forests, which have been covered in the plan under revision, are located in Arsu, Chowai and Nither Ranges of Anni Forest Division. The total Geographical area of the tract is **715 km²**. The boundaries of Anni Forest Division are co-terminus with that of civil jurisdiction of Anni, Sub-Division, and District Kullu. The whole tract drains into river Satluj. The tract lies between latitude 31° 39'32'' & 31° 20' 40'' North latitude and between 77° 41'22'' and 77° 23' 12'' East longitudes are covered by the Survey sheet, 1:15000 scale, No. 53E-10-SE, 53-10-SW, 53E-11-NE, 11NW & 53E-11SW. The Head quarter of Anni Forest Division is located at Luhri which is about 98 KM from Shimla and 85 KM from Kullu.

1.1.1 The tract of the Anni Forest Division was re-organized during 1999. Before re-organization in 1999, the control of two Ranges viz Chowai & Nither, was with Kotgarh Forest Division and the Arsu Range was with Rampur Forest Division. Subsequently, this Division came into existence on 31st May, 1999 with headquarter at Luhri under the control of Conservator of Forests, Kullu, Distt. Kullu HP. Later on, the control of this Division was brought under the jurisdiction of Rampur Forest Circle on 28th April, 2003 vide Notification No. FFE-A (A) 1-3/98 (Copy of Notification is annexed as **Appendix-XX**). Now, this Division contains three territorial Ranges viz Arsu, Chowai & Nither. The territorial jurisdiction of the Anni Forest Division falls in civil jurisdiction of Anni, Sub-Division of District, Kullu, H.P.



1.2 Boundaries:

North: - Shrikhand Mahadev

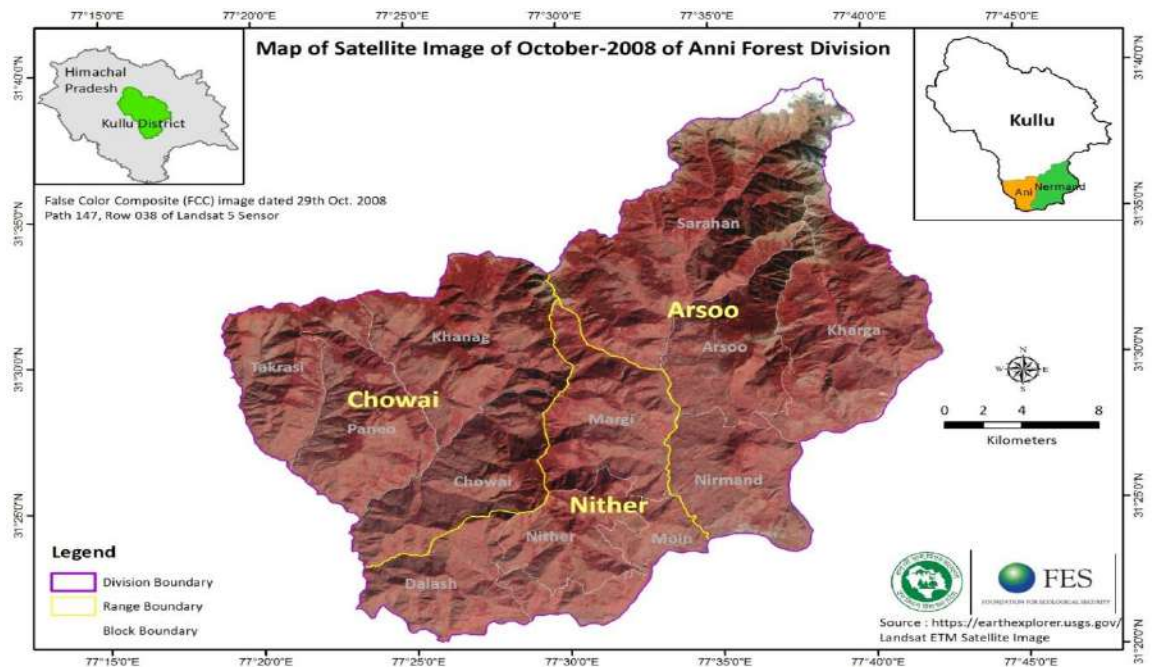
East: - 15/20 area of Distt. Shimla, ultimately joining at Satluj in the East.

South: - River Satluj.

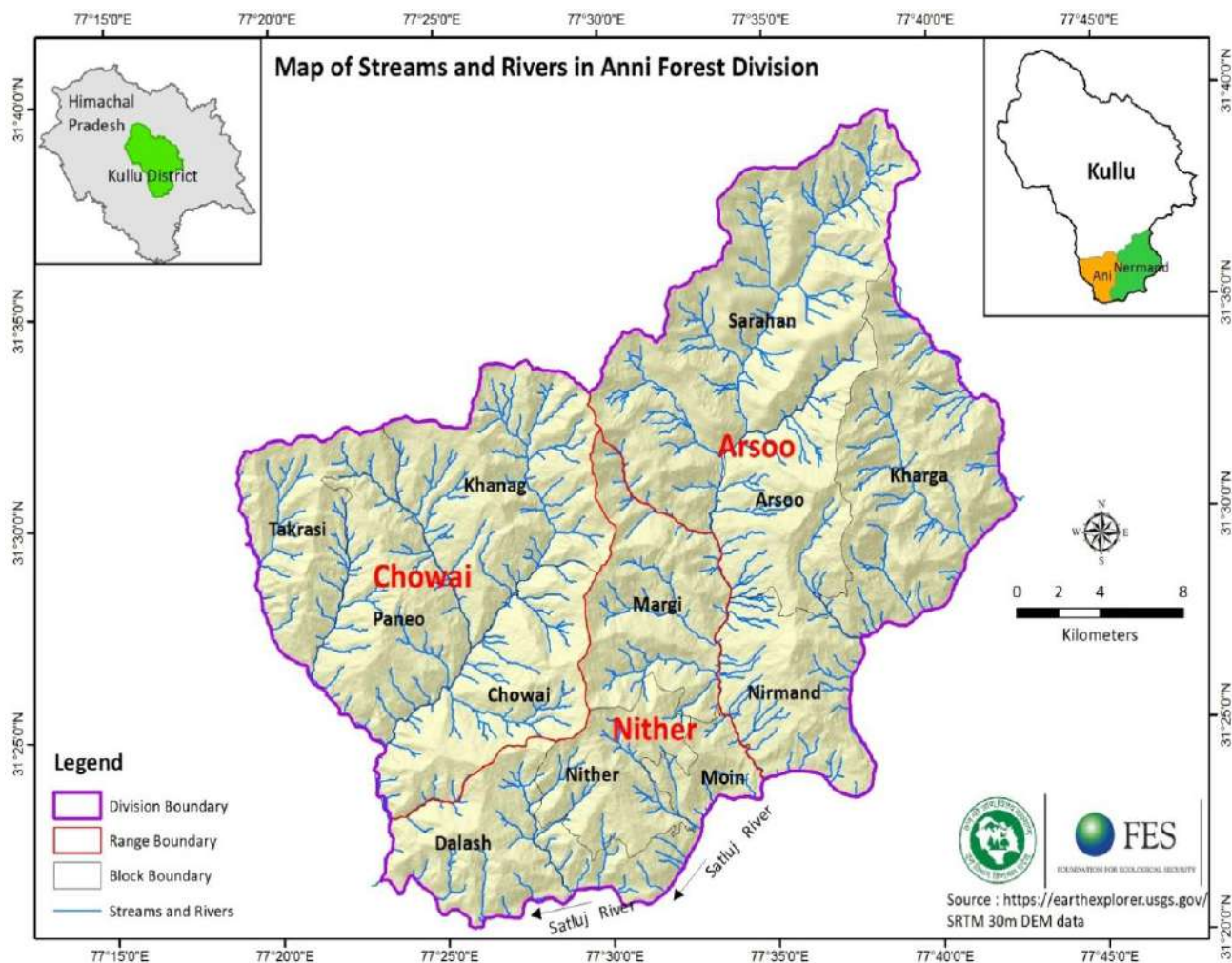
West: - Behna Khad (Draining into River Satluj).

1.3. Configuration of the Ground:

1.3.1 The tract is hilly and undulating with altitude varying from 738 mtrs and 5227 mtrs, and the top of which is Shri Khand Mahadev. The lowest point is in Nither Range near Behana Village, at the confluence of Behana khad in Satluj River. The tree growth extends upto 3700 mtrs above which lie extensive inaccessible areas with grasses, rocks & snow. The gentle slopes on lower elevation are generally under agriculture crops & steep to very precipitous slopes on higher altitude are under Forests. Shri khand Dhar, an off shoot of great Himalayan Range drops down to khad named Ladpramagad separates from 15/20 areas of Shimla District which ultimately joins at Satluj in east. This khad bifurcate the Kandar from the boundary of Arsu Ranges of Kullu Distt. There after the Satluj separates Shimla District in the South, Behana khad in the West a tributary of the Satluj separating Mandi Distt. In the North the inner Seraj is separated by the branch of Shrikhand Dhar taking off from Shri khand Mahadev Tibba.

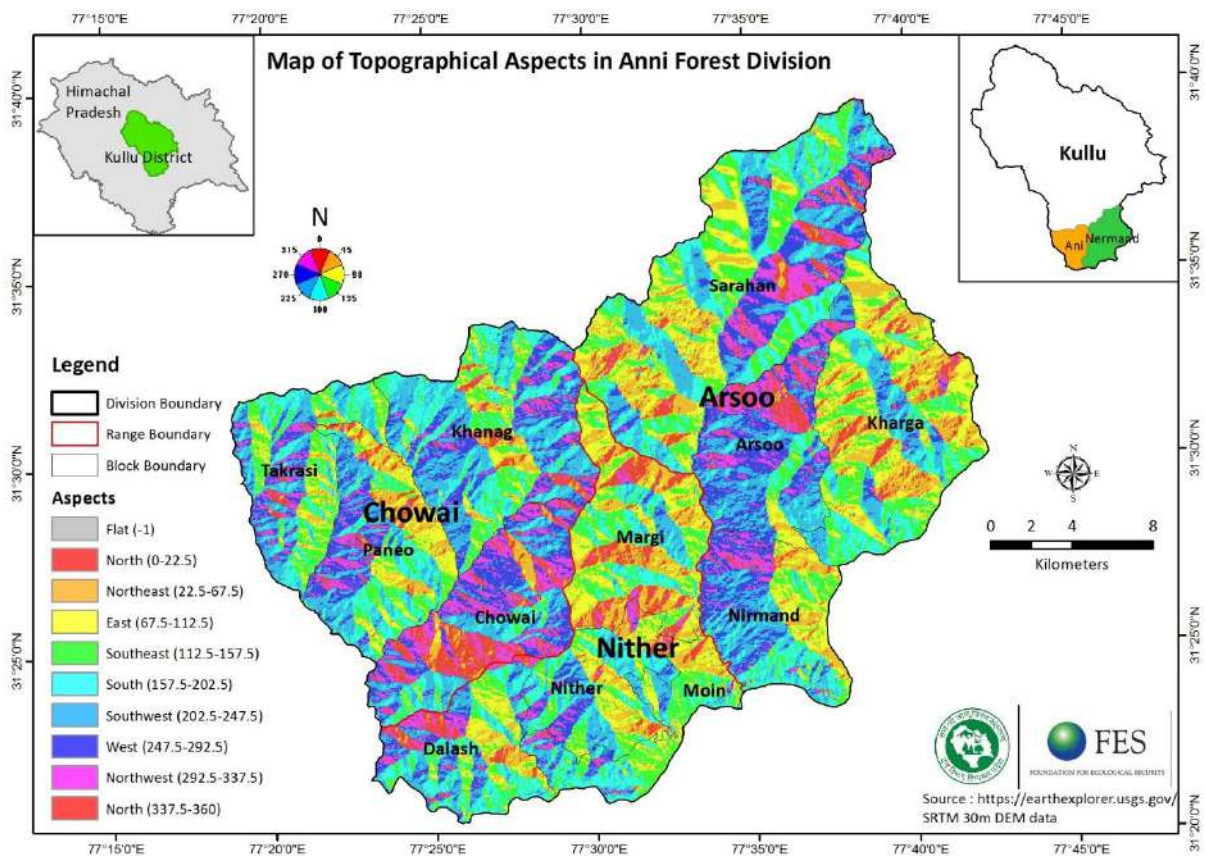
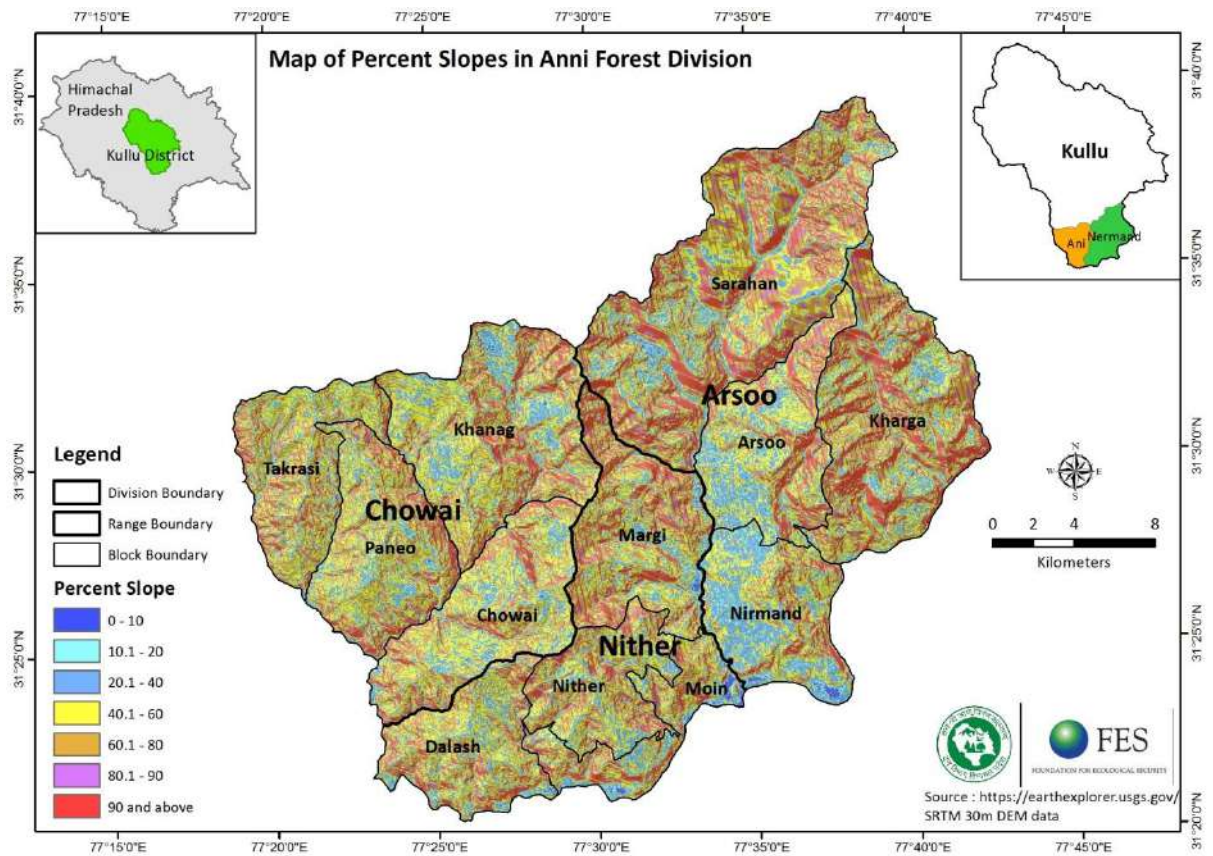


The area is traversed by ridges, dividing the catchments of Kurpan, Jajar, Nimla Nala Shamshargad, Sanaigad etc. finally drains into Satluj River.



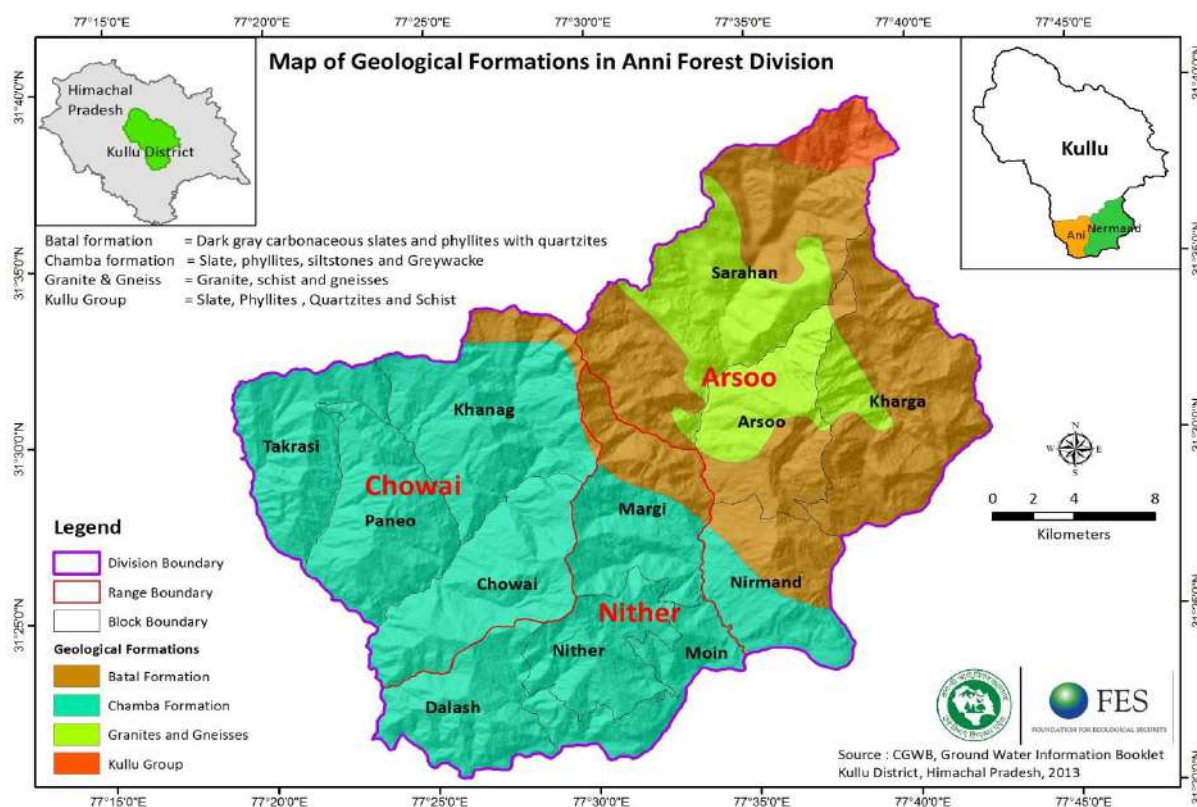
The main Dhars are as under:

- **Shrikhand Dhar:** The inner Seraj is separated by the branch of Shri khand Dhar taking off from Shri khand Mahadev Tibba and passing through Jalori pass and Raghpur Fort.
- **Latanda Dhar:** It originates from Nauhanu Kanda and proceeds towards Satluj near koel village through Sarahar.
- **Adashi Dhar:** It also originates from Nauhanu Kanda and proceeds towards Satluj near Anus village through Chebari, Anus.
- **Palehi Dhar:** It originates from Kul Kanda and proceeds towards Satluj near Gothana village through Tandi and Tihan.
- **Mungari Dhar:** It originates from 1/18 Bhon and proceeds towards Satluj near Behana village through Mungari.
- **Chounra Dhar:** It originates from Paneo and Proceeds to Anni via Dagehan, Mahvi villages.



1.4 Geology , Rock and Soil:

Geology, rock and soil affect the vegetation of a place by influencing the moisture regime, texture and drainage of the soil. Therefore study of the geology rock and soil is necessary for Forest management. The underlying rocks are mainly Quartzite, Schist's, Dolomite, Limestone's, Shales, Slates, Gneisses and Granite occasional bands of intrusive granite which are responsible for coniferous and broad leave Forests. The Quartzite's produce sandy soil after disintegration, which Granites, Schist's, Shale's and Gneisses produce loamy and sandy loamy soils. The underlying rocks often exercises a powerful influences over Forest vegetation, becoming increasingly important as rainfall, decreases and abrupt changes may occur on account of geological formation. The same effect may be produced on steep and sandy soil which cannot hold moisture. Quartzite for example after disintegration produces soil of finest quality but is generally unfavorable for Deodar. This formation is characteristic & good deal of area found in 15/20 Kothi of Outer Seraj in Arsu Range, Traijhakar, Parkotshil, and Bungbindraban & Palenichaloun Forests of Chowai Range and Gwan Forests of Nither Range. Gneisses and schist's disintegrate into loam and clay, favourable to Deodar and Kail. Deodar regenerates prolifically on clays but quality of growing stock is moderate. Granites on the other hand produce a soil amicably suited to Deodar as is found in Sarahan Block of Arsu Range, Takrasi Reserve Forests, Ghaner Kala on Reserve Forests of Chowai Range and Margi Block of Nither Range.



1.4.1 The information regarding geology, rock and soil of Seraj Forest division has been obtained from Geological Survey of India, Himachal Pradesh Circle, Chandigarh and is described as under :-

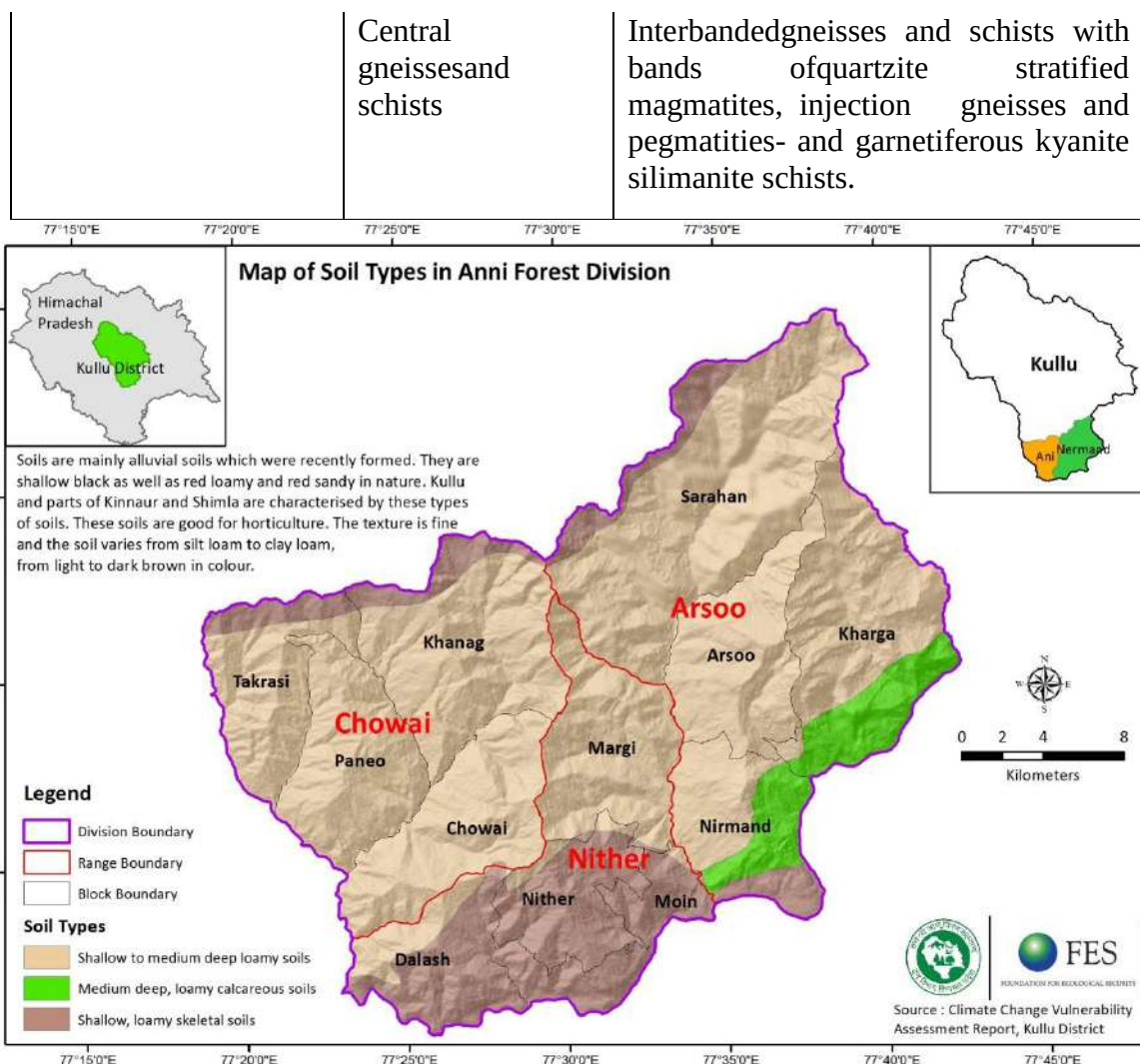
Stratigraphic sequence of the Kullu - Rampur belt.

Alluvium Basic Intrusive:

- i) Coarse grained conglomeratic and gritty detritus dolomite.

- ii) Grey dolomite showing algal structure. Alt member (1,000 Meters)
- iii) Cream and pink coloured limestone
- iv) Grey massive dolomite.
- v) Pink and cream coloured lime stone.
- vi) Thick fine grained grey dolomite

Largi for highly, mention (mainly) Permian	Hurla member (200 Mtr.)	Pink white and grayish, member jointed massive quartzite with dark purple and grey shale- slate partings at places calcareous. The quartzite shows passage into Larji dolomite.
	Naraul member (2,000m)	Slate and pyrite, massive quartzite, at places grading into calcareous quartzite and calcareous slates with lenticular bands of limestone and dolomite
	GrAnnite (Post Carboniferous)	Fine to coarse grained, massive and foliated porphyritic granite migmatite - and augengneiss with bands of greenish basic schist's and roof pendants and bands of quartzite. Slates and phyllite with basic schist's and grey massive and flaggy quartzite's at places showing ripple marks.
Banjar (Devonian to Carboniferous)	Green bed member (1,000 -1500m.) carboniferous	Green basic schist's, massive formation traps and greenschists / phyllites with bands of massive quartzite, phyllites and gneiss.
	MAnnikaran Quartzite	Very thick band of white and banded massive quartzite (2000metres at places schistose with Devonian). basic flows and sills
	KhamradaMember (200-600m) Silurian	Carbonaceous and ash grey slatephyllite and quartz schist's at places garnite-ferous with lenticular band and lentils of grey and cream coloured, intricately folded platy and massive limestone.
Jutog formation (Precambrian to Silurian)	Gahr member (100-500mtrs)	Quartzes, streaky, banded and augengneisses at places showingptygnatic folding. At places it occurs interblended with over lying khamrada member and also with underlying Kullu member



1.4.2 In the remote Forest, the ground is often covered with layers of needles in various stages of decomposition whereas in the vicinity of villages the soil has deteriorated due to the continuous removal of litter "SUHR" as called locally.

Soil texture of the tract, in general is clayey loam rich in organic matter with varying depth over greater part, except in naked and exposed areas near habitations where it is poor with low organic contents. The reaction of the soil is acidic on the higher altitude because of lower rate of decomposition of organic matter and deficiency of B.L. spp. Thick and un-decomposed humus of spruce and silver fir Forests creates a problem for natural regeneration of this spp. as the seed do not reach the soil.

1.4.3 Podsol: Podsollic soils are developed in temperate climates and generally hold the conifers in the Himalayas. It is formed under coniferous vegetation. The soil is covered with thick layer of humus which remains un-decomposed due to low temperature and short summer. Humic acid is formed. The leaching medium is acidic because of presence of humic acid. The micro biological activities are very low. The PH. of soil is acidic. The chloride, sulphates, alkali and alkaline earth substances get leached. These become degraded soils because of break of nitrogen cycle in temperate coniferous Forests. These soils can be improved by a mixture of broad leaved species and heavy canopy opening

1.4.4 Brown Forest soils: Such type of soils are formed in temperate climatic under broad leaved vegetation cover. There is no accumulation of thick humus on the top and the humus is of

neutral type. The pH reaction varies from 5 to 7. The underlying rocks influence the structure and the texture of the soil as some rocks on disintegration give rise to fine grained material and others coarse grained material which affects the water holding, capacity of the soil and consequently influences the type of vegetation which can come up on various types of textures and structures of the soil.

1.4.5. Deodar cannot regenerate on calcareous parent rock. It requires heavy soil with good moisture retaining capacity while Chil requires coarse grained sand particle having good drainage. Therefore, Chil prefers the soils formed out of quartzite's and Deodar is happy on the soil formed due to disintegration of granite. Kail requires shallower which boulders in sub-soil and Silver Fir and Spruce come up on all soils and can tolerate more acidic conditions. Cupressus tree come up well on calcareous soils. The soil has been formed in –situ in almost entire tract of the Division and belongs to Podzolic group.

1.4.6 Soil Types: Two soil types are found in tract: -

- i) **Forest Soil:** -Forest Soil is mainly of two types namely Acidic Soil with low base status and Neutral Soil with high based status. Forest Soils are by and large rich in humus.
- ii) **Alluvium Soil:** - At very few places in this tract, this type of Soil is found mostly along the river. Soil is rich in humus in Deodar and Fir Forest which hampers the natural regeneration.

1.5 Climate:

The broad zones of vegetation have been divided based on Climatic conditions which are mainly temperature and rainfall and its location w.r.t. equator. The climate is tropical of temperate zone at high altitude above 1000 meter and sub tropical at lower elevations. Generally April to June and October to December are dry months. The major precipitation is received in the months of July and August while snow and rain precipitate in the area during January to March. Snow fall occurs above 1600 Metres, but sometimes goes down to 899 Meters, the snow seldom lies for long period below 2200Metre. Autumn is generally very cold; May and June are very hot at low elevation. Localised cloud bursts causes havoc to the elevation. Localised cloud bursts causes havoc to the growth and soil which results into severe floods. Sometimes, the natural calamities also cause huge loss of life and property. ***In this tract, during the intervening night of 21st and 22nd August, 2001, due to heavy rains and cloud burst the two Villages namely Bhadhali and Sarali witnessed the havoc of the natural calamity which caused huge loss of life and property.***

1.5.1 Winter Season: Through, the duration of winter season depends on the altitude, it generally last from November to April, in most parts of the tracts. It is characterized by heavy frost in the lower areas and fairly heavy snowfall at higher elevation. Rain and snow during winter season come from northwestern air currents, and snowfall starts at higher elevation toward the end of the November or early in December. In normal year, snow disappears before the middle of May except in depressions of higher altitude.

1.5.2 Summer Season: This is the driest period and is characterized by frequent showers and heavy Forest fire. Generally hot winds blow up and make the climate very hot which results in short spring.

1.5.3 Rainy Season: It starts with the advent of monsoon, either towards the end of the June or early in July or lasts till middle or sometime in the end of September. The distribution of rainfall is, however, not regular. Sometime, it rains exceptionally heavy for few days causing soil erosion,

landslides and floods. The scars of landslides caused by such unusual cloudbursts take several years to heal.

1.5.4 After the rainy season, the sky becomes clear and there is very little rain, if any, during October to November. In these months, the diurnal range of temperature is quite marked. The soil losses moisture very rapidly. There is another dry period during the months of October and November

1.6 Rain fall:

As discussed under sub Para 1.5.3 & 1.5.4 that nearly half of the precipitation occurs during the month of July and September and the winter rains, especially in February and March are very low. Since, there is rainfall gauges in the tract, hence, the monthly rainfall data has been taken from the adjoining Rampur Forest Division and is tabulated in the table No 1.1 & 1.2

Table No.1.1

Rainfall (in mm)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1999	78.9	19.9	5.4	0	31.4	19.6	185	60.9	18.5	0	0	5.2	424.8
2000	0	0	0	0	0	244.9	337.9	21.3	12.1	0	0	0	616.2
2001	20	40	105	34	103	113.9	60	123.1	60	0	16	41	716
2002	61.5	142	93	104	13	45	10	152	104	0	0	1	725.5
2003	55	110	60	61	11	41.5	264	132	107	0	4	41	886.5
2004	67	4	0	69	57	114	93	244.5	24	81	2	6	761.5
2005	68.3	135.1	100.4	41.5	11.8	130.4	348.4	23.6	181.8	2	0	0	1043.3
2006	110.9	24.1	77.7	35.6	68.9	112.8	159.9	111.1	52.7	9	9	23.8	795.5
2007	0	98.5	133.8	15.6	33.2	4.6	132.8	155.3	26.4	8.6	0	29.7	638.5
2008	124.8	31.2	6.4	40.3	55	185.2	161.8	138.4	242.1	7.7	4	0	996.9
2009	16.6	9.6	23.3	38.4	43.7	20.6	186.3	80.9	236.3	10.2	36.2	9.6	711.7
2010	22	110.2	19.8	46.5	73.3	209	247.7	195.5	232.9	61.4	4	50	1272.3
2011	31.4	79.4	53	37.8	87	219.9	93.9	207.5	71.3	0.5	0	3.2	884.9
2012	99.7	38.5	49	87.5	5.9	37.4	124.9	200.4	98	2.4	0.7	19.5	763.9

(Source: Working Plan of Rampur Forest Division)

Table No.1.2

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1999	7	2	1	0	7	3	11	9	4	0	0	2	46
2000	0	0	0	0	0	7	17	4	2	0	0	0	30
2001	1	5	6	5	9	10	12	11	2	0	1	4	66
2002	7	10	5	5	4	5	5	12	7	0	0	1	61
2003	4	6	5	3	3	7	16	14	12	0	1	3	74
2004	6	1	0	4	2	6	9	14	4	4	1	2	53
2005	9	15	13	6	10	11	16	8	14	1	0	0	103
2006	6	2	12	4	5	15	6	17	8	4	3	3	85
2007	0	9	11	2	8	5	11	12	10	2	0	5	75
2008	11	5	1	8	13	18	13	18	9	5	1	0	102
2009	6	4	4	4	10	3	11	12	11	5	3	3	76
2010	3	7	4	5	11	11	18	22	15	3	2	2	103
2011	4	11	8	8	14	16	12	20	9	1	0	2	105
2012	8	8	5	15	3	7	15	25	9	1	1	4	101

(Source: Working Plan of Rampur Forest. Division)

1.7 Temperature:

Due to great variation in altitude, the temperature also varies considerably. Minimum temperature goes down up to 1°C during winter and maximum temperature exceeds 35-40°C in the lower areas during the summer. The temperature in the different parts of the tracts varies according to the elevation. Temperature begins to rise rapidly from the end of February, till June which is the warmest month. Since, there is no temperature recording instrument in the tract, hence, the monthly maximum and minimum of adjoining Banjar Division has been taken and is tabulated in Table No 1.3.

Table No.1.3

Year	Temp.	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec	Annual
1995	Max.	10.1	11.6	17.4	20.7	28.9	31.5	29.8	25.6	26.8	23.7	20.1	13.0	21.6
	Min.	-1.3	0.9	4.0	6.7	11.4	15.6	17.5	17.0	12.2	7.6	2.3	1.2	7.9
1996	Max.	12.2	14.9	16.3	23.5	24.9	13.0	28.4	27.8	18.3	24.3	20.1	16.9	20.0
	Min.	-0.3	1.9	4.8	8.6	10.5	15.7	17.5	18.0	14.2	7.3	4.0	-2.0	8.3
1997	Max.	12.8	13.6	17.3	20.3	23.8	26.3	27.7	25.5	25.7	20.3	15.1	11.4	20.0
	Min.	-0.3	0.2	4.7	7.9	8.3	12.6	16.3	14.3	13.0	6.4	2.4	1.4	7.3
1998	Max.	10.7	11.8	14.9	22.7	27.0	28.1	29.6	29.1	26.9	23.3	20.4	17.3	21.8
	Min.	-0.5	1.0	1.8	8.0	15.6	20.7	23.6	20.7	17.2	12.9	17.5	5.6	12.0
1999	Max.	10.0	15.2	18.5	25.0	25.7	27.8	28.7	27.2	27.7	25.3	20.8	15.9	22.3
	Min.	3.8	7.0	8.4	13.4	15.6	17.7	20.3	20.6	18.2	11.8	7.3	4.4	12.4
2000	Max.	11.6	10.0	16.6	24.3	27.5	27.9	25.8	28.9	27.1	25.8	18.1	15.8	21.6
	Min.	3.9	2.1	6.0	12.2	16.4	18.2	19.9	19.8	15.8	12.3	8.4	6.2	11.8
2001	Max.	13.6	17.1	15.4	18.3	26.6	26.9	28.9	28.8	29.1	25.9	20.0	14.4	22.1
	Min.	3.0	5.7	7.8	11.1	15.8	19.1	21.9	21.7	15.8	12.5	8.8	4.5	12.0
2002	Max.	12.0	7.1	18.8	22.5	26.6	28.6	30.5	27.1	25.0	24.6	20.9	15.2	21.6
	Min.	2.8	3.4	9.0	11.5	14.9	18.3	20.9	20.7	11.6	10.6	7.0	5.4	11.3
2003	Max.	14.0	13.1	16.4	22.2	24.9	26.9	28.2	28.1	26.4	24.7	18.8	13.7	21.4
	Min.	3.6	4.3	5.8	11.7	11.9	16.1	20.9	20.2	17.5	9.5	6.6	4.4	11.0
2004	Max.	11.4	13.6	23.2	23.9	28.4	20.9	28.7	26.5	27.5	20.2	18.3	13.5	21.3
	Min.	3.6	4.9	10.2	12.6	14.7	16.3	19.0	19.4	17.7	9.8	7.7	5.1	11.8
2005	Max.	8.6	9.1	16.2	20.6	23.3	28.0	26.2	28.0	25.7	23.8	18.9	15.4	20.3
	Min.	2.7	3.5	8.3	10.2	11.4	16.6	20.0	19.9	18.0	11.2	5.6	3.7	10.9
2006	Max.	11.3	17.8	16.2	20.8	26.9	26.2	26.7	27.5	25.1	22.6	18.6	13.6	21.1
	Min.	4.1	9.1	9.1	11.1	16.2	17.4	21.4	20.1	17.4	12.1	7.4	5.1	12.5
2007	Max.	12.6	11.8	16.4	25.9	25.6	28.3	26.8	27.5	22.5	23.8	19.7	13.1	21.2
	Min.	3.7	4.9	6.9	14.1	14.8	18.4	20.2	19.2	18.9	11.9	9.2	4.8	12.2
2008	Max.	7.6	12.2	20.7	21.1	24.9	26.7	27.2	25.8	24.3	22.0	19.7	15.9	20.7
	Min.	2.7	4.1	9.5	11.3	15.5	19.0	21.7	20.2	16.4	12.5	8.2	8.1	12.4
2009	Max.	11.8	13.8	17.7	21.8	24.6	28.1	28.8	27.9	25.7	23.4	17.3	13.3	21.2
	Min.	6.6	7.7	9.2	11.8	13.9	17.6	20.0	20.9	18.6	11.2	7.5	6.1	12.6
2010	Max.	14.0	13.2	21.0	23.2	25.3	26.8	24.8	25.7	24.7	22.9	19.9	14.7	21.3
	Min.	5.0	5.3	10.5	13.7	15.4	16.0	19.6	21.4	18.0	12.7	9.8	4.5	12.6
2011	Max.	9.9	10.8	18.2	20.3	25.8	26.5	26.1	25.4	25.2	22.9	19.7	14.6	20.4
	Min.	2.5	4.3	9.1	10.6	15.3	17.7	20.3	20.2	18.2	11.8	8.5	4.4	11.9

(Source: - Working Plan of Seraj Forest Division).

1.8 Effects of Climate on Forest Growth:

- a) Heavy rains in monsoon or pre- monsoon, sometimes, cause havoc to trees growth which result in soil erosion, landslides and floods.
- b) From April to June, when temperature is high, the probability of Forest fires is very high in lower areas. Young plants in the nurseries and plantations suffer from persistent drought and large scale mortality is noticed in areas with sandy and dry soils. The natural springs run dry, thus, causing a problem of water for raising nurseries.
- c) Autumn (September –October) are relatively dry months.
- d) All the areas above 1000 m, experience severe frost, especially in the depressions during winter.
- e) High hill areas experience snow, during November to February; many plants are uprooted or broken. In young regeneration areas, roots lifting due to frost are also noticed. However, snow is very helpful for augmenting ground water and is also utilized by the plants.

1.9 Water Supply:

Good springs exist throughout the tract and supply of drinking water is generally satisfactory except some of the springs at lower elevation and on ridges such as Takrasi, Paneo dry up during summer months and replenished only when the rains break. There is Scarcity of water in Shatal Dhar, Averi, Nither and Luhri area. The main streams which are fed by snow do not dry up but flow of water varies considerable during various seasons where as in other streams in dry months the water is sometimes insufficient even for paddy crops and floating of timber rendered impossible. When drought or fire occurs and cause considerable damage to the Forests growth and aggravates shortage of water. The main tributaries of the tract originates from the hill ranges which are covered with snow during major part of the year. The water supply of the tributaries is perennial. Numerous water supply schemes have been implemented by the State Government for the augmentation of water supply in the tract. Sufficient water is also available for Forest nurseries.

1.10 Distribution of Area:

The total geographical area of the tract has been calculated by GIS, Cell, Mist Chamber, Khalini Shimla, Himachal Pradesh and the copy of the same is annexed as **Appendix-XXXVI**) and the beat wise geographical area of Anni Forest Division is annexed as **Appendix-IV**. The total geographical area of the Division comes out to be **71514.39 Ha** (715Km²). The total Forest area is **53699.52 Ha**. The total area of the reserved Forest is **2076.04 ha**. and that of Demarcated Protected Forests (I and II Class) is **23210.98 Ha**. The area of III Class Listed UPFs as per plan under revision is **28412.50 Ha**. While rest of the area comes under unlisted III class Forests which includes snow clad mountains. The Range wise and category wise area statement is tabulated in Table No.1.4. The area has been calculated by the GIS Cell by delineating the boundaries upto beat level with the help of topo sheets, however the Ground Truthing of the same is required to be done. D.F.O. Anni is requested to take the matter with concerned Revenue Authority.

Table No. 1.4

Sr. No.	Name of Range	Reserve Forest (RF) (In Ha.)	Protected Forests (In Ha.)			Others land (Private/ Revenue land etc.)	G. Total
			DPF I Class	DPF II Class	III Class Listed UPFs		
1	Arsu	1875.72	2223.76	11196.45	9732.72	6619.28	31647.9282
2	Chowai	185.35	2580.18	4965.19	9198.94	6620.95	23550.6096
3	Nither	14.97	1786.47	458.91	9480.84	4574.66	16315.8548
	G.Total	2076.04	6590.41	16620.55	28412.5	17814.89	71514.39

Since no Forest and Revenue Settlement has been carried out in the area of this Division, therefore, the variation, if any, is required to be reconciled/updated. However, Divisional Forest Officer, Anni should update and correct the area at the time of Forest and Revenue Settlement.

1.10.1 Reserved Forests: Generally the reserve Forests are either situated in places remote from inhabitations where nobody ever goes or consists of small areas of Deodar Forests in vicinity of villages from where it has been possible to exclude Rights. The former class of the Reserve Forests usually has on steep ground at fairly high elevations in remote and gloomy valleys, the latter Forests are generally grooves of ancient trees still considered in parts as secret to local diets.

1.10.2 Demarcated Protected Forests I Class: These are the Forests situated within the zone of human inhabitation and are scattered all over the tract. They are surrounded or bounded by the cultivation, very greatly in size and elevation, and are the areas most used by people for grazing, firewood building timber and non timber Forest produce. Rights of people are less extensive and more clearly defined. These Forests are not only useful from people's point of view too, because they contain the most valuable part of the growing stock. Forests contain mainly Chil, Deodar and Kail crops and are situated on comparatively easier slopes and medium elevation.

Lower portion being occupied by Chil Forest, in the Deodar and kail Forests the higher reaches are covered with pure mixed crops of Fir and spruce. In the cooler aspect pure spruce and silver fir occurs in depressions in such Forests. In short most of the Deodar and pine timber from these I Class Forests, the demand of local Right Holders as per Settlement Report is met with and for supply to non-Right Holders, other department, the Timber requirement are being supplied through HPSFDC Ltd. by way of Salvage marking.

With the increase in pressure of population and change in living standard these Forests bear the burden of all pressures including encroachments. The lucrative business of raising apple almond and stone fruit orchards have tempted the people to engage in encroachment.

In a note of Kullu Forest Settlement, Lt. General D. Fitzpatrick wrote:

“The moment a man steps out of the enclosure of his house or off his field he will be in a government Forest and subject to the Forest law. He cannot take his plough bullocks to his field or to water without taking them through Forest.”

1.10.3 Demarcated Protected Forests-II Class: These Forests are situated (with few exceptions), above I Class Forests. They are remote, away from habitations, occupy higher

elevations and are more frequently used by people for summer grazing than other purpose. These Forests mainly consist of spruce and silver fir as the elevation increases. Grassy glades are inter-spaced with band of Fir Forest until the limit of arborescent vegetation is reached and Forest give place to alpine pasture of so much value to shepherds. They supply large quantity of Fir timber for local requirements and exports usually only lower line of the Forests has been demarcated. So that these Forest, extending as they do, to the main ridges, contain large areas of rock, snow and ice. More than half the area of this class of Forests is defined Forest for name sake but by including it within the limit of demarcation, it has been possible to define Rights of pasturing and so as to mitigate the inter minable quarrels as who may graze in certain pastures. Grazing Rights are clearly defined in these Forests.

1.10.4 III Class Listed Undemarcated Forests: These consists of all other Forests all Govt lands other than those notified as "Reserved and Demarcated Protected Forests" and the private land. These are of considerable value to the people. The wooded area provides building timber and fire wood to the neighbouring villages while the grass land is over grazed or carefully divided into hay fields. In the settlement report of Kullu, these Forests are described as containing woods valueless to Govt. This however is not the case since valuable wood are available in Class III Forests, though they are small areas in the vicinity of villages near cultivated lands or strips lying along the boundaries of demarcated areas. The protection that has been afforded to III class Forests has been rewarded by stacking of many areas by young Kail and by increase of young Deodar along the Kail on areas near Deodar mother trees, but during world war these Forests were heavily felled for export. Though the control of these Forests rests with the Divisional Forest officer, no systematic management could be taken up without proper demarcation & more over as all these Forests are open to grazing there is problem of establishment of regeneration. All sorts of Rights are being exercised by local inhabitants, including breaking up of land for cultivation. To regenerate these Forests, closures are generally made usually with the consent of the right holders. A move had been made as early as 1915 to demarcate some of the more valuable portions in main Beas and Satluj valley but no action could be taken due to excessive Rights and area being small in extent. However one area was demarcated in Anni Range and R/8 Kui Kaloon was declared as reserved Forests under Punjab Govt. Notification No. 8261 dated 16.03.1920.

There are very valuable chunks of these Forests which need immediate delimitation cannot wait till Forest settlement is revised list of such area is prepared and appended. The Forests (III class) which are immediately to be got delimited major portion of IIIrd class is honey combed with private cultivation. All the demand of nautor was met with in these IIIrd class Forests. Nautor were granted subsequently to settlement operations has made III class Forests worst, because no definite policy was followed in deciding the location of the nautor by the revenue authorities. Nautors have been granted any where and every where as per convenience of the grantee. The area of these Forests can't be correctly assessed without proper delimitation and measurements and area recorded is merely an estimation which has been obtained after calculating the survey sheets by dot grid and deducting area under cultivation and area under reserve and demarcated protected Forest. The exact extent of encroachment and nautor could not be assessed and ascertained in absence of proper delimitation to get clear picture of area in III class Forests. This aspect needs checking and authentication on completion of revenue settlement.

1.10.5 Acquisition of lands in Demarcated Forests: There are some included cultivations, in the Demarcated Protected Forests in varying extent. These chaks were kept as such during settlement operation. The chaks present in the Forest makes it difficult in management like, closure the Forest for regeneration and other activities. Chaks are acquired either by giving land in exchange or by cash payments as per prevalent Rules and orders of the Hon'ble Supreme Court.

The exact area of these Chaks needs to be measured and assessed/recorded properly at the time of settlement operations. However, the list of chaks is annexed as **Appendix No.– XXXVIII.**

1.11 Numbering of Compartments:

Negi's Working Plan was prepared for the Forest of Arsu, Chowai, Nither Ranges. These Ranges were part of erstwhile Kullu / Seraj Forest Division. Now separate Working Plans have been prepared for Kullu, Seraj and Parvati Forest Divisions. However, the detail of compartments and sub-compartment numbers has been kept same as per Negi's Plan and the list of same is given in **Appendix-I and Appendix-II.** General abstract showing the allotment of Forests to various working circle is given in **Appendix-III.**

1.12 State of Boundaries:

The boundaries of the Reserved and Protected Forests were marked at the time of Forest Settlement by Anderson and according to the settlement report the boundary register was deposited with the then Divisional Forest Officer at Kullu. However this boundary registers pertaining to the Seraj Forest Division is not traceable. No boundary records were available either at the headquarters of the Divisional Forest Officer, Seraj or its Range headquarters making it difficult to check the position of the boundaries. Whatever Forests were declared as Reserved and Protected I class and II class were not entered in the Revenue records as such. The III class Forests were not demarcated at all during the settlement operations. In the absence of boundary register and mention about the boundaries of the Forests in the Revenue records of the district, the only option left, for checking of the boundaries of the Forests, was with the help of 4"-1 mile survey sheets.

During the checking of the boundaries it was found that the state of boundaries in Reserved and 2nd class Forests, away from the habitation, was satisfactory but those of Ist class Forests along the private cultivations was not reliable. At a number of places the boundary pillars are missing or are not at their original position. There are no boundary pillars around the included chaks inside the Forest compartments. A number of encroachments were also detected with the help of the survey sheets. The details of observations about the state of boundaries have been recorded in the compartment history files of the Forests. In spite of similar observations about the state of boundaries recorded by Aggarwal and again by Kapoor; there seems deterioration in keeping the boundaries of the Forests and their records in order. The beat guards generally, do not know the correct position of the boundary pillars. From the field inspections it is observed that only a few number of boundary pillars were erected at the time of settlement and some intermediate boundary pillars were corrected subsequently but their record is not available now.

The district authorities have sanctioned 'Nautor's in the Demarcated Forests in the past. The 3rd class Forests have not been surveyed so far and no boundary for them exists. All the wastelands in the tract excluding the cultivations/private land over which the government has proprietary Rights have been declared as III class Forests. The area of the III class Forests mentioned in this working plan is based on ocular estimates, calculation by dot grid on 4"-1 mile survey sheets similarly the boundaries of such Forests shown in the maps are on the basis of calculation on the same survey sheets.

Secondly, no magnetic bearing (Forward & Backward) are recorded for avoiding encroachments, etc. The boundary pillars in most of the cases are found damaged or missing; it should be reconstructed after getting proper demarcation. Annual programme for checking and repair of B.Ps was proposed in the Working Plan under revision. All the B.Ps could not be

checked/ maintained as per annual programme prescribed in the expired Working Plan due to paucity of funds. However, the detail of boundary pillars which were repaired is tabulated in Table No.1.5

Table No.1.5

Repair of Boundary Pillar:

Name of Range	Name of forest	No. of Boundary Pillar		Total	Amount Incurred (Rs.)	
		Main Pillar	Check Pillar			
Arsu	Year 1996-98 to 2019-20					
	Nil					
Chowai	Year 1996-97					
	1/13 Traijhakar			47	1713	
	Year 1996-97					
	1/32 Kalandidhar			21	988	
	1/30 Chotar			8		
	1/31 Jhakar			6		
	Year 1998-1999					
	Nil					
	Year 1999-2000					
	Nil					
	Year 2000-2001					
	Nil					
	Year 2001-2002					
	Nil					
	Year 2002-2003					
	R/8 Kai Kalon			29	986	
	Year 2003-04					
	1/13 Traijhakar			51	4000	
	2/23 Khanora			19		
	Year 2004-2005					
	2/24 BunngMalero			15	3550	
	R/8 Kai Kalon			17		
	1/12 DradReunsh			33		
	Year 2005-2006					
	1/34 Thach Shill			9	9310	
	1/35 Paneo			21		
	R/7 Takrasi			19		
	R/8 Kai Kalon			9		
	1/11 Kot			15		
	2/23 Mandribeel			9		
	2/26 Khaneo			8		
	2/25 Kothanal			8		
	2/31 Dughashill			27		
	Year 2006-2007					
	Nil					

	Year 2007-2008				
	1/26 Parkotshill			39	10500
	1/28 Kotadhar			34	
	1/11 Koot			29	
	2/27 Gohan			53	
	2/34 Chul			14	
	1/22 BaruBherd			49	
	Year 2008-2009				
	1/31 Jhakar			22	11800
	1/32 Kalandi Dhar			27	
	1/26 Parkotshill			39	
	1/28 Kotadhar			40	
	R/6 Takrasi			14	
	2/30 Sakiran			15	
	2009-10 to 2019-20				
	Nil				
Nither	1996-97				
	Nil				
	Year 1997-98				
	1/24 Shila	10	29	39	1400
	1/18 Buhan	5	8	13	509
	1/17 Gohan	6	8	14	561
	Year 2001-02				
	R/14 Margi kaloan	12	22	34	1377
	1/16 Shilla	10	20	30	1275
	1/17 Gohan	6	0	6	348
	Year 2003-04				
	1/10 Bashad	7	10	17	878
	2/20 daman	6	7	13	690
	2/21 Patal	5	10	15	742
	1/8 Lohar	13	19	32	1650
	1/14 Marah Kod	17	31	48	2426
	1/15 Lot Kayon	10	20	30	1539
	Year 2005-06				
	1/16 Shilla	12	0	12	910
	1/24 Shila	8	24	32	1680
	Year 2007-08				
	R/14 Margi kaloan	12	8	20	1800
	1/8 Lohar	19	32	51	4200
	1/16 Shilla	8	17	25	1900
	1/17 Gohan	20	10	30	2000
	Year 2008-09				
	1/9 Bijuri	20	69	89	6800
	1/10 Bashad	8	6	14	1300
	2/20 Daman	9	20	29	2800
	2/21 Patal	8	12	20	1100

Year 2015-16				
1/15 Lot kayaon	8	14	22	3200
1/14 Marah kod	7	10	17	2600
1/24 Shilla	8	9	17	2600
1/16 Shilla(Himri)	8	10	18	2800
1/17 Guhan	10	14	24	3680
1/18 Buhan	4	11	15	2120
Year 2016-17 to 2019-20				
Nil				

(Source: Record of Arsu, Chowai and Nither Range).

1.13 Maps:

Survey sheets on 1: 50000 scales are available in this division. However, the entire area of AnniForest Division is covered in the survey sheets given below in the Table No:-1.6

Table No:- 1.6

Sr. No.	Survey Sheet No.
1	H43F7
2	H43F11
3	H43F10
4	H43F6
5	53/E/10
6	53/E/7
7	53/E/6
8	53/E/11

1.14 Legal Position:

The settlement of Kullu Forests began in 1866 and was carried at a time when the Indian Forest Act was passed in 1878; there is no change in the legal position, Rights and concession in the Forests. As such the legal position, Rights and concessions as in last working plan are briefly described below: -

By that time some area has been demarcated and rules which had been drawn up by Mr. Duff, the then Forest Officer Kullu. Under the provision of the Forest Act, the first Notification with a view to effecting the settlement of the Forests under Chapter -II of the Act was issued in July, 1880. In 1883, orders were issued by the Punjab government that bulk of the Forests were to be treated as protected, only small and special areas being constituted as “Reserves”.

Soon after the issue of these orders the work of settlement was commenced by Mr. Alexander Anderson, the Assistant Commissioner, assisted by Mr. Gisborne Smith, the local Forest Officer. The settlement report was submitted in 1886 and the proposed 'reserves' were gazetted as such in 1895 and after considerable alterations has been made in the record of Rights, and in the proposed rules for the protected Forests, the necessary notifications concerning them

were issued in 1896. The final result of the settlement was to create, four classes, of Forests of which the first constituted the 'Reserves' under Chapter -II of the Forest Act while the others were placed under the provisions of Chapter -IV of the Act.

The 'Protected' Forests were divided into 'Demarcated' Forests of I and II classes and 'Undemarcated' Forest also termed III class Forests. The general difference between Ist and II classes is that in the former the Rights of user are less extensive and more clearly defined than in the latter, a difference which was made because the first class Forests were more valuable both for the people and for producing timber for export. The II class Forests differ from the Undemarcated Forests in having the grazing Rights in them more clearly defined and also in being intended to be preserved from being broken up for cultivation.

Though the boundaries of the 'Reserved' Demarcated Protected' Forests were defined and notified in the gazette by the Government of Punjab. Yet these Forests have not been entered as such in the Revenue record of the District. The result is that in the past a number of 'Nautors' have been granted by the Revenue Officers in the Demarcated Forests. For them all classes of Forests created and notified through the Forest Settlement is nothing more than wasteland. This is a situation where the Revenue Department in nutshell is working against the interest of Forest Department. The Government of Himachal Pradesh has now decided that all the Forests notified as 'Reserved' and 'Demarcated Protected' Forests should be entered in the Revenue record as such. Its being experienced now that such entries cannot be made unless a joint settlement by revenue and Forest department is undertaken and record is prepared of such Forests after proper demarcation along with the private lands. It is relevant here to add that during Revenue Settlement in the Kullu district only the private holdings were measured and record thereof made, rest of the area comprising Government land was categorised as waste land and Grazing Land.

In the various settlement reports, it has been mentioned that ***“if the exercise of Rights as admitted in any Forest, would endanger the existence of Forest, the extent to which the Rights will be exercisable can be re-determined and should the exercise of Rights become detrimental to the exercise of the Forests over which these are exercised, the extent to which the Rights will be exercisable can be re-determined”***.

Yet this option has seldom been exercised in the past for conservation of Forests. H.P. Forest Settlement Rules, 1965 have been framed under Section 76 of IFA, 1927. The guiding principle laid down for determining the Rights and concessions under these rules are as under: ***“All these Rights and concessions are meant for the satisfaction of personal bonafide requirements and subject to condition that Forests are to be maintained in perpetuity. The right of user of easement is always a limited one; it can never extend so as to destroy the servient estate. The right exists so long as the (servient) property is safe or continues to exist, because if the (servient) estate ceases to exist, the right ceases with it. So while dealing with the claims, the Forest Settlement Officer should see that the Forests are not unduly burdened”***.

Keeping in consideration the powers delegated to the state Govt. under Section 32 of IFA, 1927, based on the guiding principles under HP Forest (Settlement) Rules, 1965 and the orders passed by Hon'ble HP High Court the HP Forest (Timber Distribution of Right Holders) 2010 have been formulated and notified.

1.14.1 With the enforcement of “Forest Conservation Act, 1980”, the Revenue Department and other departments are finding it difficult to parcel away to the third party or even Government party, even the areas under 3rd class Forests, as no Forest area can be put to non-Forestry use anywhere, without the approval of Government of India.

1.14.2 All the Forest and waste lands have been declared as protected Forests vide Himachal Pradesh Govt. Notification No. Ft. 29-241-BC/49 dated 25-2-1952 (**Appendix-XXI**) Vide PCCF Memo No. Ft. 48-66/83 (FCA) dated 20.04.10. FCA is applicable on all such lands. Thus, all the Govt. waste lands existing in this division are protected Forests. All the trees in Forests declared protected have been reserved vide Govt. Notification No. Ft. 29-241-BC-149 dated 13.11.1963 w.e.f. 1st January, 1964.

1.14.3 In T.N. Godavarman Thirumulpad V/s Union of India, the Supreme Court of India held that the Forest (Conservation) Act, 1980 must apply to all Forests irrespective of the nature of ownership or classification thereof and it was further held that the word “Forest” must be understood accordingly to its dictionary meaning. This description covers all statutory recognized Forests, whether designated as reserved, protected or otherwise for the purpose of Section 2 (i) of the Forest (Conservation) Act, 1980. Although neither formal notification to this effect has ever been issued by the H.P. Government nor the revenue entry has been made in revenue record under the H.P. Land Revenue Act, 1954.

1.14.4 Vide Pr. CCF, HP Memo No. Ft. 48-66/83 (FCA) dated 20.4.2010 and the Supreme Court’s order dated 12-12-1996, Forest (Conservation) Act, 1980 is applicable on all such lands in State of Himachal Pradesh, except on vested land under the H.P. Village Common Lands (Vesting and Utilization) Act, 1974 and H.P. Ceiling on Land Holding Act, 1972, as per H.P. Govt. Notification dated 21-4-2006. In **T.N. Godavarman V/s Union of India, WP(C) No. 202/95 dated 12-12-1996 (Appendix-XXIX)**, the Hon’ble Supreme Court held that the Forest (Conservation) Act, 1980, must apply to all Forests, irrespective, of the nature of ownership and classification of land thereof and it was, further, held that the word “Forest” must be understood according to its dictionary meaning. This description covers all statutory recognized Forests, whether designated as reserved, protected Forests or otherwise for the purpose of Section 2 (i) of the Forest (Conservation) Act, 1980. The terms of “Forest” shall not be applicable to the plantation raised on private lands, except notified private Forest. However, felling of trees in these private plantations shall be governed by the HP Land Preservation Act, 1978. Cases of illicit felling, illegal mining and encroachment, etc. have to be dealt under the provision of the Indian Forest Act, 1927. Similarly, in **T.N. Godavarman Thirumulpad V. Union of India (1997) 2 SCC 267**, the Supreme Court held that no eviction may be made from any land or building containing machinery and equipment or any other facilities for housing, school or dispensary etc. in the, meantime, on the basis of the Apex Court order dated 12-12-1996 (**Appendix- XXXIV**). Till date, as far, concerned of ‘Protected Forests’ declared by the Govt. Notification dated 25th February, 1952, no efforts has made for ascertaining and determining the nature and extent of the Rights and setting them in a through manner, as in the case of constitution of a Reserved Forests, Chapter-II of the Act. Therefore, it needs to be done under Sub Section (3) of Section 29 read with Section 30 to 32 of the Act, otherwise, it carries no meaning in the eyes of law. By mere declaration of such land will not be treated as Forest land, until and unless, waste land which declared by the State Govt. by notification dated 25th February, 1952 as “Protected Forests” is recorded as Forest land in land revenue record under the H.P. Land Revenue Act, 1954 read with Sub-Section (3) of Section 29 of the Indian Forest Act, 1927. If, no such record is maintained, it is reasonable to presume that land in dispute, is not recorded as, ‘Protected Forests or Forest Land’ in the revenue record. Thus, it is clear that provision of the Indian Forest Act is not applicable on un-demarcated protected Forests, as the same, is not a notified Forest under Act.

Similarly, it is also mention here that the Forest department has raised plantation over these land (i.e. waste land and Shamlat Deh lands) over the period of time, but these areas do not come under the purview of Indian Forest Act, 1927. Similarly, 32 nos of existing listed un-demarcated protected Forests (UPFs) area are required to be notified as ‘Protected Forest’ under the Act, so that anomalies could be legally rectified for the same as the Indian Forest Act, 1927

use the word 'Protected Forest' only, instead, of Demarcated Protected Forests and Un-demarcated Protected Forests.

After the Forest (Conservation) Act, 1980, coming into force, no Forest land can be diverted for non-Forestry purpose without the prior approval of the Central Government. Due to this enactment, the distinction amongst the demarcated or un-demarcated Forest or un-classed Forests and common lands regarding breaking up of land or use land has disappeared for application of Forest (Conservation) Act, 1980 only.

Thus, no Forest/Forest land or part thereof, shall be leased or transferred to any other Govt. Department or organization or institution or agency or grant nautor or land to landless person, etc. without prior approval of Govt. of India and Forest land will not be diverted / used for non-Forestry purpose without obtaining prior approval of Govt. of India, under Forest (Conservation) Act, 1980

1.15 Rights and Concessions:

The Rights were inquired into and recorded at the time of the Forest Settlement. These Rights are recorded in the record of Rights register. The Rights were recorded in each Forest separately and are given in **Appendix - XXXVII** of the plan. There is no change in the legal position, Rights and concession in the Forests. As such the legal position, Rights and concessions as in last working plan are briefly described below: -

The general condition for exercise of Rights was also laid down and forms a part of the Appendix. According to para 33 of the Settlement dealing with Reserved Forests and para 43 dealing with protected Forests and condition number 4 of the general conditions for, I, II and III class Protected Forests, the 'Rights' are appended to the cultivated land, assessed to revenue, including cultivated land recorded at the last assessment of the revenue as waste belonging to private persons upon which, this is liable to assessment, no revenue was charged in the internal distribution (Bachh), and also land brought under cultivation since last assessment of the revenue with the permission of the Assistant Commissioner, and they are acquired and alienated only with such land. They are exercised only for the bonafide agricultural and domestic purposes of Right Holders. The Rights thus have been recorded by villagers and hamlets and not by individual name. The Rights can be acquired or alienated only with the land.

For non-agricultural residents i.e. residents who are neither proprietors nor cultivators of land, some concessions have been allowed in III class Forests, Para 60 of the Settlement report lays down that such non-agricultural residents have been allowed to graze their Cattle, Sheep and Goats, to collect dry fuel and to cut grass in the Undemarcated areas subject to withdrawal in case of abuse. The general conditions are laid down in notification No. 282 dated 1st June, 1896 for Undemarcated Forests.

Punjab Government, however appointed a commission of inquiry headed by Mr. Carbett after some representations were made regarding the administration of Rights, particularly right to trees. On the recommendation of the commission, Punjab Government vide notification No.1590-Ft dated 2.6.1941 changed the definition of Right Holders and forbade the transfer of Rights of land was alienated. However during 1948 this notification No.4117 dated 26.4.1948 and old definition of Right Holders were retained conferring Rights with the alienation of land.

The Government reiterated condition number 10 of the general conditions for the exercise of Rights in various Forests which is reproduced below:-

"To all Rights admitted are subject to the limitation that they may not be exercised to an extent that may endanger the existence of the Forest, a limitation must be placed on the exercise of those Rights are admitted. If the exercise of the Rights as admitted would endanger the existence of the Forest and in that case the extent of the Rights of Right Holders inter se shall be proportionate to the revenue assessed or it might be assessed in respect of the land to which the right is appended.

Para 67 of the settlement laid down that trees at 'Zimindari' rates was not available to person who has acquired a land by purchase, for construction of a house on the acquired land if seller of the land has already got a house and thus new settlers are required to buy trees at market rate.

The details of Rights recorded and restrictions placed on their exercise are found in the record of Rights and various paragraphs of the Forest Settlement of Kullu.

The salient feature of the Rights of various types of Forests is that there are very few or no Rights in the reserved Forests, very defined and few Rights in first class Forests and comparatively more Rights in 2nd class Forests. In 3rd class Forests the permission has been made for the exercise of certain concessions to the non-agricultural residents in addition to the exercise of Rights by the Right Holders.

The Rights may be suspended in cases of wilful neglect to extinguish fires.

1.16 Timber Distribution to Right Holders:

Rights and concessions as recorded in Forest Settlement Report, have remained unchanged except Timber Distribution Rights. However, the State Govt. has recently notified H.P. Forest (Timber Distribution to Right Holders) Rules, 2010, for the rationalization of grant of timber and further, amended new (Timber Distribution to Right Holders) Amendment rules, 2015. The detail rules with regard to quantity, periodicity, rates, priority for grant of timber distribution and various other provisions have been given in the Notification No. FFE-B-A (3)4/2015 dated 26 February 2016 (*See Appendix-XXIII*).

These Rules cover the Timber Distribution (T.D.) Rights for construction and maintenance of residential house, cowshed that too for bonafide domestic use, without affecting the other Rights contained in the Forest Settlement Report in operation. Forest centered based on the principle, that if, the Forests will remain intact only people will be able to exercise Rights namely of Timber distribution (TD). Further, these Rights are people centered, more so, rural poor centered.

- (i) The Rights recorded in settlement other than Timber Distribution (TD) like free grant for last rites of the dead, collection of medicinal herbs, grazing, etc. have not been touched upon and would remain to be exercised, as they were in the past.
- (ii) To have transparency involvement of people in Timber Distribution through their Gram Sabha has been ensured. For rationalization process, the State Government have given direction to look into the following aspects:
 - a) As the TD is concerned with land holding in rural areas, that too, for construction/repair of house/cowshed for domestic purpose, the TD in Urban areas has been done away with.

- b) If the Right Holders have land holding at more than one place, then TD will be granted at only one place of the choice of land holder.
- c) TD will only be enjoyed by original Right Holders and not by those, who have purchased land after taking permission under Section 118 of the HP Tenancy and Land Reforms Act, 1972 from now onwards.

The following are some of the important bartans admitted in the Settlement Report:-

1.16.1 Grant of Timber: Timber Distribution (T.D.) is a unique policy, in the colonial history of Forest management. It is a policy that provides every landowner with the right to harvest timber for the construction and repair of their houses. This policy, while, providing for a basic need of the local population, is also the single largest reason for timber harvest in the Western Himalayan region. Rates were accordingly fixed, for the grant of trees of all the conifer species to bartandars. Though, no limit on the number of trees to be sanctioned was fixed, but, it was provided in the Settlement Report that trees should be sanctioned only to meet the legitimate domestic and agricultural requirements. The trees used for building timber in this Division are namely Deodar, Kail and Fir/Spruce, etc. The trees at concessional rates were given from the Demarcated Protected Forests and Un-demarcated Protected Forests to the Right Holders only. As per current Timber Distribution Rules, the requirement of the Right Holders is to be met from the salvage trees, as per H.P. the Notification No. FFE-B-A (3)4/2015 dated 26 February 2016 and by this notification, now, Right Holders are not entitled to get timber distribution (T.D) for construction & repair of house etc. from the Forest directly. The annual quantity of timber given to Right Holders on Right Holders rates and free grant during the period 1996-97 to 2019-20 is tabulated in Table No: 1.7

Table No. 1.7

Year	Deodar		Kail		Chil		Rai/Fir.		B.L		Total	
	No.	Vol. (in cum)	No.	Vol. (in cum)	No.	Vol. (in cum)	No.	Vol.(in cum)	No.	Vol.(in cum)	No.	Vol.(in cum)
1996-1997	674	2087.44	450	1420.67	13	37.81	15	64.88	0	0	1152	3610.8
1997-1998	796	2322.45	364	1043.71	15	47.63	20	78.2	3	0.588	1198	3492.58
1998-1999	351	1006.58	396	1022.45	7	16.24	6	13.6	0	0	760	2058.87
1999-2000	139	416.992	83	234.54	0	0	10	21.66	0	0	232	673.19
2000-2001	426	1318.46	207	540.02	4	9.62	7	8.21	1	1.336	645	1877.65
2001-2002	418	914.87	185	356.67	1	3.54	4	17	0	0	608	1292.08
2002-2003	707	1386.31	114	157.24	65	15.8	13	15.3	5	1.898	904	1576.55
2003-2004	1003	2565.38	314	679.31	41	22.8	22	47.83	1	1.336	1381	3316.66
2004-2005	250	660.51	193	301.64	10	11.01	43	80.15	0	0	496	1053.31
2005-2006	262	676.41	395	916.57	4	6.22	69	104.69	0	0	730	1703.89
2006-2007	102	247.77	55	130.6	7	12.31	13	42.04	0	0	177	432.72
2007-2008	0	0	0	0	0	0	0	0	0	0	0	0
2008-2009	0	0	0	0	0	0	0	0	0	0	0	0
2009-2010	0	0	0	0	0	0	0	0	0	0	0	0
2010-2011	0	0	0	0	0	0	7	31.12	0	0	7	31.12
2011-2012	0	0	3	12.04	0	0	10	63.71	0	0	13	75.75
2012-2013	5	15.43	7	15.71	0	0	0	0	0	0	12	31.14

2013-2014	0	0	0	0	0	0	0	0	0	0	0	0
2014-2015	4	14.16	0	0	0	0	0	0	0	0	4	14.16
2015-2016	5	17.7	23	67.97	0	0	0	0	0	0	28	85.67
2016-2017	248	631.49	23	51.93	0	0	4	13.02	0	0	275	696.44
2017-2018	231	593.98	178	360.52	1	3.54	39	164.57	1	1.27	450	1123.88
2018-2019	150	383.03	43	108.06	4	1.68	32	135.09	1	2.177	230	630.04
2019-2020	98	228.85	68	168.51	4	6.51	28	99.52	0	0	198	503.39

(Source: Records of DFO, Anni.)

1.16.2 Lopping: Lopping of trees for fodder, fuel and manorial requirements result in considerable damage. The excessive lopping results in death of trees in some cases and increase susceptibility to attack of insects and fungi. The lopping of all broad leaved trees except Walnut, Boxwood and Ash, shisham and alder are lopped for fodder, manure, fuel and manufacture of charcoal. Kail lopping is permissible only in III Class Forests where as lopping Silver fir and spruce is permissible in all the Forests for the maintenance of the cattle. Shisham and Alder are also lopped without restriction. Ruthless lopping of Kail, Fir and Broad leaved trees by villagers and graziers is doing considerable damage to the Forest crops. For Kail, Spruce and Silver Fir lopping is allowed provided that no tree under “two haths” in girth (90cm) at 4 feet 6 inches from the ground will be lopped and lopping is restricted to the lower half of the trees. Meaning, thereby, one third of the tree will be allowed to lop from the lower half of the tree. Lopping of Deodar is prohibited. This privilege is liable to be withdrawn at any time by the DFO with the permission of the Government.

1.16.3 Fuel Wood: The Right Holders are entitled to collect firewood free of charges from the Forests in which their Rights are recorded. The felling refuse/slash is also taken by the Right Holders free of charges. The fuel wood comes from all categories of Forests but major quantity is desired from the III class Forests nearby the habitations. The total population of Outer Seraj is 1.09798 persons plus 11,670 infants 0-6 age as per 2011 census and the people require approximate 1, 65,000 Tons of wood for cooking their food and keep them warm during chilling months of winter taking minimum requirement of 1.5 qtl. per person/annum. This is also a great pressure on the Forests wealth. Indiscriminate felling of Ban oak in the past has left little scope to fell more ban oak trees which is the main source of fuel wood and charcoal in the tract. Ban oak is completely protected species as notified vide letter No. Fts. (F) 13-38/84 dated 11.3.86. In order to release pressure upon the forest, HP Forest Department has registered fuel sale depot at Ropri (Anni) in Chowai Range. The sale depot is being managed by the HPSFDC Ltd. Rampur. The Detail of sale Depot Report is given as per detail below

Sr.No.	Registration No	Industry Type	Industries Name	Range Name	Block	Beat	Owner Name	Location	Established Date
1	1/2015-16	FUEL WOOD DEPOT	HPSFDC Ltd Fuel Wood Depot	Chowai	Chowai	Gad at Chowai	HPSFDC Lid Holder of Depot	Ropri	13-10-2015

1.16.4 Grazing: The grazing Rights are recorded in general way, the principle being, that a Right Holders may graze the number of cattle sheep and goat necessary for their bonafide agricultural and domestic requirements. In practice large flocks are kept for pastoral purposes which are much more than the actual requirements. The villagers generally graze their sheep and goats on the III class Forests or maybe I, II and Reserve Forests.

Heavy grazing inimical to regeneration of Forest crops but in the high lying Forests having thick layer of un-decomposed humus; light grazing is beneficial for the regeneration of fir and

spruce. The incidence of grazing over the III class Forests near the habitation is highest. The III class Forests have been degraded due to heavy grazing by increased population of cattle.



In addition to local inhabitants who take their sheep and goat to alpine pasture, outside graziers also come for summer grazing. In addition number of migratory cattle also comes for grazing in all alpine pastures during summer. The grazing rates prevalent at present are as follows: -

- (a) For local inhabitants grazing in their own Kothi.

Kinds of Animal	Fee charged in Rs.
Goat	3.12 per hundred
Sheep	4.69 per hundred

- (b) For local inhabitants grazing outside their own Kothi Rs.3.12 per hundred extra in addition to (a) above both for sheep and Goat.

- (c) For outside graziers sheep 0.19 paise per head and Goat 0.37 paise per Head.

1.16.5 Buffalo Grazing: The settlement does not allow buffalo grazing. A certain number of buffaloes were allowed by Forest Officers at his discretion to graze on permits in flat places in Undemarcated Forests where they could do little harm provided that permission shall not be given if the Right Holders in the Forest show a reasonable and sufficient cause to the contrary. A few buffaloes were allowed to graze in high level thaches of IInd class protected Forest during summer.

Buffaloes grazing by outside gujjars was introduced in 1940 in Kullu District under the orders of Punjab Govt. allowing 25 Buffaloes in Seraj Forest Division vide Punjab Govt.

notification No. 912/Ft./ dated 29.3.1940. This number was increased in 1942, 1950 and 1954 as the population increased, economic conditions improved and the tourist traffic multiplied. Each time these were increased of 5, thus raising the total number to 40 by 1954. The table given below shows the trend of the buffaloes grazing by the outside graziers at full rates. The list of gujjars with their cattle and the thaches / Forests are as below in the table No. 1.8

Table No. 1.8

Name of Gujjars	Animal Grazed		Name of Forest/ Thaches
	Adult	Minor	
1.	2.	3	4
Year – 1994			
1. S/Sh.Meer Sain S/o Hasne of Janjahli	8	8	2/33 Mandribeel
2. FarojDeen S/o Hasne of Janja.	24	24	-do-
3.Gulam Mohamed S/o Sh. Nurdeen of Chhanichar	23	14	2/29 Alatu / Niza Thach
4.Meer Sain S/o Sh.Sain Bakash of Jaja KhatiS.Garh	6	8	2/22 JadariBhamaur
5.Bagru S/o Sh.Swerdeen of Kathla Khati S.Garh	8	10	-do-
6.Yasin S/o Sh.Sohnu of JajarS.Garh	6	10	2/24 Bung Malerto
7.. Faquir Muhamod S/o Sh. Dittu R/o Jamedi S/Teh.Anni	11	5	Mandral Thach
9. juman S/o Sh. Lallu R/o Averl Teh.Nirmand	6	10	ChamAnni Thach
10. Dittu S/o Sh.Tej Deen R/o 15/20	13	18	Maja Matri Thach
11. Bashir S/o Sh.Bajir R/o Vill.Karanthal	7	10	2/32 Sharogshill
12.. Hasandeen s/o Sh. Maserdeen Karanthall	8	8	-do-
	120	125	
Year – 1995			
1. Juman S/o Sh. Lallu R/o Averl Teh.Nirmand	6	10	ChamAnni Thach
2..Dittu S/o Sh.Tej Deen R/o 15/20	13	18	Maja Matri Thach
Total	19	28	
1996			
1. S/Sh..Meer Sain S/o Hasne of Janjahli	8	8	2/33 Mandribeel
2. FarojDeenS/o Sh.Hanse of Chuidhar K.Janja	24	24	-do-Bashlaithach
3. Gulam Mohamed S/o Sh. Nurdeen of Chuidhar	23	14	2/29 Alatu Niza Thach
4. Meersain S/o Sh.Sainn Baksh of Jajar Khati S.Garh	6	8	2/22 JadariBhamaur
5.Bagru S/o Sh.Swerden of Kakhla Khati S.Garh.	8	10	-do-
6.Yashin S/o Sohnu of Jajar Khati S.Garh	6	10	2/24 Bung Malertu
7.Shukar Deen S/o Sh.Noor Zamaill of Nehri Nal	6	4	Sharogshill Gumpri Thach

9.Juman S/o Sh. Lallu R/o Averl S. Teh.Anni	6	10	Chamani Thach
10.Dittu S/o Sh.TejDeen R/o 15/20	13	18	Moja Matri Thach
11. Bashir S/o Sh.Bajir R/o Vill.Karanthal	7	10	2/32 Sharogshill
12.. Hasandeen s/o Sh.Maserdeen Karanthall	8	8	-do-
Total	115	124	
-Year-1997			
1. S/Sh..Meer Sain S/o Hasne of Janjahli	8	10	2/33 Mandribeel
2. FerojDeen S/o Sh.Hasne of Janja	24	24	-do-
3. Gulam Mohamed S/o Sh.Nurdeen of ChuidharKhatiJanja.	23	24	2/29 Alatu
4. Meersain S/o Sh. Sain Baksh of Jajar Khati S.Garh.	6	8	2/22 Jadari Bhamau
5. Bagru S/o Sh.Swerdeen of Kathla Khati S.G.	8	10	2/22 JadariBhamaur
6.Yasin S/o Sh.Sahnu of Jajar Khati S.G.	6	10	2/24 Bung Malertu SharathaTh iach
7. Jaman S/o Sh. Lallu R/o Averl Teh. Nirmand.	6	10	ChamaniThac
8. Dittu S/o Sh. TejDeen R/o vi.15/20	13	18	Moja Matri Thach
9.Bashir S/oSh.Bajir R/o Vill.Karanthal	7	10	2/32 Sharogshill
10.. Hasandeen s/o Sh.Maserdeen Karanthall	8	8	-do-
Total	109	132	
1998			
1. S/Sh.Meer Sain S/o Hasne of Janjahli	8	10	2/33 Mandribeel
2. Farojdeen s/o Sh.Hasne of Janja	24	24	-do-
3. Gulam Mohamed S/o Sh.Nurdeen of Chuidhar	23	14	2/29 Alatu
4. Meer Sain S/o Sh.Sain Baksh of JajarKhoti S.G	6	8	2/22 Jadari Bhamaur
5. Bagru S/o Sh.Swardeen of Khatla Khati S.G	13	20	-do-
6. Yashin S/o Sh.Sahnu of Jajar Khati S.G	6	10	2/24 Bung Mlertu
7 Bashir S/o Sh.Bajir R/o Vill.Karanthal	7	10	2/32 Sharogshill
8.. Hasandeen s/o Sh.Maserdeen Karanthall	8	8	-do-
Total	95	104	
Year-1999			
1. Faquir Mahammed S/o Bagru of KathlaKhatiS.Garh.	8	10	2/22 Jadari Bhamaur

2. Yasin S/o Sh. Sahnnoo of Jajar S.Garh	7	10	2/24 Bung Malartu
3. FarojDeenS/o Sh.Hasne of Janja	24	24	2/33 Mundribeel.
4. S/Sh.Meer Sain S/o Hasne of Janjahli	8	8	2/33 Mandribeel
5. Juman S/oSh.Lallu R/o vill. Averi Teh.Nirmand	6	10	Chamani Thach
6. Dittu S/o TejDeen R/o 15/20	13	18	Maja Matri Thach
7.Bashir S/o Sh.Bajir R/o Vill.Karanthal	7	10	2/32 Sharogshill
8.Hasandeen S/o Sh. Maserdeen Karanthal	8	8	-do-
9. Gulam Mohamed S/o Sh.Nurdeen of ChuidharKhatiJanja.	23	14	2/29 Alatu
10. Meer Sain S/o Sh.Sain Baksh of JajarKhoti S.G	6	8	2/22 Jadari Bhamaur
Total	110	120	
Year-2000			
1. YasinS/o Sh.Sahnnoo of JajarS.Garh	7	10	2/24 Bung Malartu.
2. Faquir Mahammed S/o Bagru of Kathla KhatiS. Garh.	8	10	2/22 Jadari Bhamaur
3. Faroj Deen S/o Hasne of Janja.	24	24	2/33 Mundribeel
4. Juman S/o Sh. Lallu R/o Averi Teh.Nirmand	6	10	Chamani Thach
5. Dittu S/o Sh.TehDeen R/o15/20	13	18	Maja Matri Thach
6. Bashir S/o Sh.Bajir R/o Vill.Karanthal	7	10	2/32 Sharogshill
7.. Hasandeen s/o sh. Maserdeen Karanthal	8	8	-do-
8. Meer Sain S/o Sh.Sain Baksh of JajarKhoti S.G	6	8	2/22 Jadari Bhamaur
9. S/Sh.Meer Sain S/o Hasne of Janjahli	8	10	2/33 Mandribeel
Total	87	108	
Year-2001			
1. Husan Deen S/o Sh.Nasardeen of Karanthal Khati Janja	8	8	-do-
2. S/Sh..Meer Sain S/o Hasne of Janjahli	8	10	2/33 Mandribeel
3. Meer Sain S/o Sh.Sain Baksh of JajarKhatiS.Garh.	6	4	2/22 JadariBhamaur
4.Faraj deen S/o Sh.Hasne of Janja	24	24	2/33 Mundribeel
5.Yashin S/o Sh.Sahnnoo of JajarS.Ghar	7	10	2/24 Bung Malartu
6 Faquir Mohammad S/oSh.Dittu R/o Jamedi S/Teh.Anni	11	5	Mandral Thach
7. Juman S/o Sh.Lallu R/oAveriTeh. Nirmand.	6	10	ChamAnni Thach
8.Dittu S/o Sh.TejDeen R/o 15/20	13	18	Moja Matri Thach
9. Bashir S/o Sh.Bajir R/o Vill.Karanthal	7	10	2/32 Sharogshill
Total	90	99	

Year-2002			
1. Kimu Mohamed S/o Sh. Gulam Mohammad S/o of Dogri	23	14	2/29 Alatu Nigha Thach
2. Bashir S/o Sh. Bajir R/o Vill. Karanthal	7	10	2/32 Sharog shill
3. Sh .Meer Sain S/o Hasne of Janjahli	8	10	2/33 Mandribeel Bashlai Thach
4. Hasandeen s/o sh. Maserdeen Karanthal	8	8	-do-
5. Meersain S/o Sh. Sain Baksh of Jajar	6	8	2/22 Jadari Bhamaur
6. Suleman S/o Sh. Bagroo of Khatla Kathi S. Garh	8	10	-do-
7. Yasin S/o Sh. Sahnu of Jajar S. Garh	7	10	2/24 Bung Malartoo
8 Juman S/o Sh. Lallu R/o vill. Averi, Teh. Anni	6	10	Chamani Thach
9. Dittu S/o Sh. TejDeen R/o Vill. 15/20	13	18	Moja Matri Thach
10. Faroj deen S/o Sh. Hasne of Janja	24	24	2/33 Mundribeel
Total	110	122	
2003			
1. Suleman S/o Sh Bagroo of Khatla Kathi S. Garh	8	10	2/22 Jadari Bhamaur
2. Faquir S/o Sh. Bagroo of Khatla (Noun)	12	6	2/22 Jadari Bhamaur
3. S/Sh. Meer Sain S/o Hasne of Janjahli	8	10	2/33 Mandribeel Bashlai Thach
4. Kimu Mohamed S/o Sh. Gulam Mohammad S/o of Dogri	23	14	2/29 Alatu Nigha Thach
5. Meersain S/o Sh. Sainbaksh of Jaja kathi S. Garh	7	12	2/22 Jadari Bhamauri.
6. Jumans/o sh. Lallu r/ovill. Averi	6	10	Chamani Thach
7. Dittu s/o Sh. TejDeen r/o 15/20	13	18	Moja Matri Thach
8.. Bashir S/o Sh. Bajir R/o Vill. Karanthal	7	10	2/32 Sharog shill
9. Hasandeen s/o sh. Maserdeen Karanthal	8	8	-do-
10.. Yasin S/o Sh. Sahnu of Jajar S. Garh	7	10	2/24 Bung Malartoo
11. Firoj Deen S/o Sh. Hasne of Janja	24	24	2/33 Mandral
Total	123	132	
Year-2004			
1. Suleman S/o Sh Bagroo of Khatla Kathi S. Garh	8	10	2/22 Jadari

			Bhamaur
2. Bashir S/o Sh. Bajir R/o Vill. Karanthal	7	10	2/32 Sharog shill
3. Hasandeen s/o sh. Maserdeen Karanthal	8	8	-do-
4. Meersain S/o Sh. Sain Baksh of jajar	7	10	2/22 Jadari Bhamaur
5. S/Sh. Meer Sain S/o Hasne of Janjahli	8	10	2/33 Mandribeel Bashlai Thach
6. Yasin S/o Sh. Sahnu of Jajar S. Garh	7	10	Bung Malartoo
7. FerojDeen S/o Sh. Hasne of Janja	24	24	-do-
8. Faquir S/o Sh. Bagroo of Khatla (Noun)	12	16	2/22 Jadari Bhamaur
9. Kimu Mohamed S/o Sh. Gulam Mohammad S/o of Dogri	23	14	2/29 Alatu Nigha Thach
	104	112	
Year-2005			
1. Kimu Mohamed S/o Sh. Gulam Mohammad S/o of Dogri	23	14	2/29 Alatu Nigha Thach
2. Bashir S/o Sh. Bajir R/o Vill. Karanthal	7	10	2/32 Sharogshill
3. S/Sh. Meer Sain S/o Hasne of Janjahli	8	10	2/33 Mandribeel Bashlai Thach
4. Hasandeen s/o sh. Maserdeen Karanthal	8	8	-do-
5. Meersain S/o Sh. Sain Baksh of jajar	7	12	2/22 Jadari Bhamaur
6. Faquir S/o Sh. Bagroo of Khatla (Noun)	12	16	2/22 Jadari Bhamaur
7. Yasin S/o Sh. Sahnu of Jajar S. Garh	7	10	2/24 Bung Malartoo
8. Suleman S/o Sh. Bagroo of Khatla Kathi S. Garh	8	10	2/22 Jadari Bhamaur
9. Juman S/o Sh. Lallu R/o vill. Averi Teh. Anni	6	10	ChamAnni Thach
10. Dittu S/o Sh. TejDeen R/o Vill. 15/20	13	9	Moja Matri Thach
11. Firoj Deen S/o Sh. Hasne of Janja	24	24	2/33 Mandral
Total	123	66	
Year-2006			
1. Suleman S/o Sh. Bagroo of Khatla Kathi S. Garh	8	10	2/22 Jadari Bhamaur
2. Bashir S/o Sh. Bajir R/o Vill. Karanthal	7	10	2/32 Sharog shill

3. S/Sh. Meer Sain S/o Hasne of Janjahli	8	10	2/33 Mandribeel Bashlai Thach
4. Hasandeen s/o sh.Maserdeen Karanthal	8	8	-do-
5. Meersain S/o Sh.Sain Baksh of jajar	9	12	2/22 Jadari Bhamaur
6. Kimu Mohamed S/o Sh .Gulam Mohammad S/o of Dogri	23	14	2/29 Alatu Nigha Thach
7.Yasin S/o Sh.Sahnu of JajarS.Garh	7	10	2/24 Bung Malartoo
8. Faquir S/o Sh. Bagroo of Khatla (Noun)	12	16	2/22 Jadari Bhamaur
9. Juman S/o Sh.Lallu R/o vill.AveriTeh.Anni	6	10	Chamani Thach
10.Dittu S/o Sh.TejDeen R/o Vill.15/20	22	-	Moja Matri Thach
11. FerojDeen S/o Sh.Hasne of Janja	24	2s4	2/33 Mandral
Total	123	66	
Year-2007			
1. Faquir S/o Sh. Bagroo of Khatla (Noun)	12	16	2/22 JadariBhamaur
2.Bashir S/o Sh.Bajir R/o Vill.Karanthal	7	10	2/32 Sharog shill
3. Kimu Mohamed S/o Sh .Gulam Mohammad S/o of Dogri	23	14	2/29 Alatu Nigha Thach
4. Hasandeen s/o sh.Maserdeen Karanthal	8	8	-do-
5. Meersain S/o Sh.Sain Baksh of jajar	9	12	2/22 Jadari Bhamaur
6. S/Sh.Meer Sain S/o Hasne of Janjahli	8	10	2/33 Mandribeel Bashlai Thach
7.Yasin S/o Sh.Sahnu of Jajar S.Garh	7	10	2/24 Bung Malartoo
8 Faquir Mohammad S/oSh.Dittu R/o Jamedi S/Teh.Anni	11	5	Mandral Thach
9. Feroj Deen S/o Sh.Hasne of Janja	24	24	2/33 Mandral
10.Suleman S/o Sh Bagroo ofKhatla Kathi S.Garh	8	10	2/22 Jadari Bhamaur
	123	66	
Year-2008			
1.Suleman S/o ShBagroo ofKhatla Kathi S.Garh	8	10	2/22 Jadari Bhamaur
2.Bashir S/oSh.Bajir R/o Vill.Karanthal	7	10	2/32 Sharog shill

3. Kimu Mohamed S/o Sh .Gulam Mohammad S/o of Dogri	23	14	2/29 Alatu Nigha Thach
4. Hasandeen s/o sh. Maserdeen Karanthal	8	8	-do-
5. Meersain S/o Sh.Sain Baksh of jajar	9	12	2/22 JadariBhamaur
1. Faquir S/o Sh. Bagroo of Khatla (Noun)	12	16	2/22 JadariBhamaur
7.Yasin S/oSh.Sahnu of JajarS.Garh	7	10	2/24 Bung Malartoo
6. S/Sh..Meer Sain S/o Hasne of Janjahli	8	10	2/33 Mandribeel Bashlai Thach
9.Mohamed S/o Juman R/o vill.Averi Teh.Anni	6	10	Chamani Thach
10.Dittu S/o Sh.TejDeen R/o Vill.15/20	22	--	Moja Matri Thach
11. Feroj Deen S/o Sh.Hasne of Janja	24	24	2/33 Mandral
	123	66	
Year-2009			
1. S/Sh.Meer Sain S/o Hasne of Janjahli	8	10	2/33 Mandribeel Bashlai Thach
2.Bashir S/oSh.Bajir R/o Vill.Karanthal	7	10	2/32 Sharog shill
3. Faquir S/o Sh. Bagroo of Khatla (Noun)	12	16	2/22 Jadari Bhamaur
4. Hasandeen s/o sh.MaserdeenKaranthal	8	8	-do-
5. Meersain S/o Sh.Sain Baksh of jajar	9	12	2/22 JadariBhamaur
6. Kimu Mohamed S/o Sh .Gulam Mohammad S/o of Dogri	23	14	2/29 Alatu Nigha Thach
7.Yasin S/oSh.Sahnu of JajarS.Garh	7	10	2/24 Bung Malartoo
8.Suleman S/o ShBagroo ofKhatla Kathi S.Garh	8	10	2/22 JadariBhamaur
9.Mohamed S/o Juman R/o vill.AveriTeh.Anni	18	8	Chamani Thach
10.Dittu S/o Sh.TejDeen R/o Vill.15/20	25	11	Moja Matri Thach
11.Abdul Mohamed S/o Sh. Bagroo Vill.Naun	10	5	2/22 Jadari Bhamaur
12. FerojDeen S/o Sh.Hasne of Janja	24	24	2/33 Mandral
	123	66	

Year-2010			
1.. Kimu Mohamed S/o Sh .Gulam Mohammad S/o of Dogri	23	14	2/29 Alatu Nigha Thach
2.Bashir S/oSh.Bajir R/o Vill.Karanthal	7	10	2/32 Sharog shill
3. Yusof S/o Meer Sain Vill. Shamble P.O Pandoh	7	10	2/33 Mandribeel
4. Hasandeen s/o sh.Maserdeen Karanthal	8	8	-do-
5. Meersain S/o Sh.Sain Baksh of jajar	9	12	2/22 JadariBhamaur
11.Abdul Mohamed S/o Sh. Bagroo Vill.Naun	10	5	2/22 JadariBhamaur
7.Yasin S/o Sh. Sahnun of JajarS.Garh	7	10	2/24 Bung Malartoo
8.Faquir Mohammad S/o Sh. Dittu r/o vill.Jamedi S/Teh.Anni	11	5	2/33 Mandral
9.Suleman S/o ShBagroo of Khatla Kathi S.Garh	8	10	2/22 JadariBhamaur
10. FerojDeen S/o Sh.Hasne of Janja	24	24	2/33 Mandral
	123	66	
Year-2011			
1.Suleman S/o Sh Bagroo ofKhatla Kathi S.Garh	8	11	2/22 Jadari Bhamaur
2.Bashir S/o Sh. Bajir R/o Vill. Karanthal	7	10	2/32 Sharog shill
3. Yusof S/o Meer Sain Vill. Shamble P.O Pandoh	7	10	2/33 Mandribeel
4. Hasandeen s/o sh.Maserdeen Karanthal	8	8	-do-
5. Meersain S/o Sh.Sain Baksh of Jhajar	9	12	2/22 Jadari Bhamaur
6.Abdul Mohamed S/o Sh. Bagroo Vill.Naun	10	5	2/22 Jadari Bhamaur
7.Yasin S/o Sh.Sahnun of JajarS.Garh	7	10	2/24 Bung Malartoo
8. Faquir S/o Sh. Bagroo of Khatla (Noun)	12	16	2/22 Jadari Bhamaur
9.Mohamed S/o Juman R/o vill. Averi Teh.Anni	6	10	Chamani Thach
10.Dittu S/o Sh.TejDeen R/o Vill.15/20	13	9	Moja Matri Thach
11. FerojDeen S/o Sh.Hasne of Janja	24	24	2/33 Mandral
12.. Kimu Mohamed S/o Sh .Gulam Mohammad S/o of Dogri	23	14	2/29 Alatu Nigha Thach
	123	66	

Year-2012			
1.Suleman S/o Sh Bagroo of Khatla Kathi S.Garh	8	11	2/22 Jadari Bhamaur
2.Bashir S/oSh.Bajir R/o Vill.Karanthal	7	10	2/32 Sharog shill
3.. Kimu Mohamed S/o Sh .Gulam Mohammad S/o of Dogri	23	14	2/29 Alatu Nigha Thach
4.Abdul Mohamed S/o Sh. Bagroo Vill.Naun	10	5	2/22 Jadari Bhamaur
5. Meersain S/o Sh.Sain Baksh of jajar	9	12	2/22 Jadari Bhamaur
6. Faquir S/o Sh. Bagroo of Khatla (Noun)	12	16	2/22 Jadari Bhamaur
7.Yasin S/o Sh. Sahnu of JajarS.Garh	7	10	2/24 Bung Malartoo
8. FerojDeen S/o Sh. Hasne of Janja	24	24	2/33 Mandral
9. Yusof S/o Meer Sain Vill. Shamble P.O Pandoh	7	10	2/33 Mandribeel
	123	66	

Under rule 8.1 of the Punjab Forest Mannual (Forest Rules of Kullu) Deputy Commissioner allows outside graziers to bring their buffaloes into Kullu District. Permission so granted is not under any statutory powers. The graziers put forth the plea that their buffaloes graze in the land of private owners. The facility is often misused at the instance of the local panchayats who derive some benefits from the gujjars in lieu of allowing them to graze. In fact such buffaloes graze in the Government Forests. However most of the buffaloes grazing was regularised by allowing them to graze and adjust in the 2nd class Forests during 1972-73 thus increasing the legal buffaloes grazing to manifold.

1.17 Minor Forest Produce:

The local people have Rights as enshrined in the Forest Settlement Report by Alexander Anderson.

The Local inhabitants have Rightsto collect medicinal plants, herbs, roots, shrubs and other Forest produce for bonafide domestic use and for sale to the traders and are permitted to remove roots of herbs and shrubs, flowers, fruits, grasses, fungi, Iris and other aromatic and medicinal plants free of charge from the Forests where they have recorded Rights for each Forest. The Right Holders can sell certain minor Forest products extracted from the Forests. The traders are not allowed to enter the Forests but can buy the produce from Right Holders after obtaining collection permission and then permitted to export the Forest produce outside the state by paying royalty to panchayat and export fee to the Forest Department. The system of issuance of export permit was made easier by delegating power on the Pradhan Gram Panchayat vide Govt. Notification No. FEE-B-C (9)/94-II dated Shimla-2, the 28th February, 2003, but now, the same has been withdrawn by the state Government of Himachal Pradesh and further notified vide Notification No. FEE-B-C (9)/94-II dated Shimla-2, the 28th February, 2017. The right of cutting grass has been admitted even in the demarcated protected Forests. Collection and sale of fruits and honey and other seeds, flowers, roots, leaves and small branches for dyes, medicines and incenses have been admitted without hindrance.The collection/extraction is regulated by collection cycle of Four years in each

division. Certain people have recorded Rights to cut grass in certain portion of DPF called "Ghasnies" but they are not owners of the site. The quantity of Minor Forest Produce collected and exported from this tract is given in table No.1.9 below.

Table No.1.9

Year	Name of MFP (Botanical Name)	Local name of MFP	Quantity Exported (In Qtl)	Royalty Export Fees (Rs.)
1	2	3	4	5
1996-97	Data Not available			
1997-98				
1998-99				
1999-00	Lichens	Chalora	34	31348
	<i>Potentilla nepalensis</i>	Dori Ghas	175	
	<i>Rhododendron anthopogon</i>	Talis Patra	80	
	Rhododendron	Kashmiri patta	30	
		Simori	32	
		Tuth	7	
		Satjalori	71	
		Nihanu	0.5	
		Brass Flower	25	
2000-01	Lichens	Chalora	191	45845
		Siski	31.5	
		Dori Ghas	46	
	<i>Rhododendron anthopogon</i>	Talis Patra	197	
	Lichens	Chora	10	
	Rhododendron	Brass Flower	17	
		RebandChini	12	
		Simbri	23	
		Potentilla Nealeniss	86	
		Cedrella spp.	6	
2001-02	<i>Rhododendron anthopogon</i>	Talis Patra	227	60125
		Dori Ghas	393	
	Lichens	Chalora	86	
		Thuth	22	
		Kapoor Kachri	10	
		Satjalori	25	
2002-03	<i>Rhododendron anthopogon</i>	Talis Patra	131	127940
		Dori Ghas	274	
	Lichens	Chalora	178	
		Thuth	9.27	
		Satjalori	5	
		Guchhi	0.75	
		Patanwall	184	
	Rhododendron	Brass Flower	10	

		Chora	13.29	
		Nihanu	5.69	
		Birch	7	
		Karu	0.015	
		Bhojpatra	0.51	
		Dhoop	20.5	
		Bramhi	34.87	
2003-04		Kail Cones	10	5275
		Kosh Cones	34	
2004-05	Rhododendron	Kashmiri patta	10	1525
2005-06		Nil		
2006-07	<i>Valeriana wallichii</i>	Mushakbala	20	
2007-08	<i>Valeriana wallichii</i>	Mushakbala	21	
2008-09		Nil		0
2009-10		Nil		0
2010-11		Nil		0
2011-12		Nil		0
2012-13		Nil		
2013-14	<i>Potentilla nepalensis</i>	Dori Ghas	50	2000
	Lichens	Chalora	192	43225
	<i>Rhododendron anthopogon</i>	Talis Patra	25	2125
2014-15	<i>Rhododendron anthopogon</i>	Talis Patra	26	36250
	Lichens	Chalora	6	1350
	Horse Chestnut	Khanor	270	40500
2015-16	Lichens	Chalora	116	62675
	Lichens & Mosses	Green Muos Grass	45	11250
	Horse Chestnut	Khanor	123	18450
	<i>Rhododendron anthopogon</i>	Talis Patra	17	1445
	Rhododendron	KashniriPatta	17	2550
2016-17	Lichens	Chalora	38	17500
	<i>Curcuma</i> spp.	Ban Haldi	30	1500
	Green Muns Grass (murse)	Moss	30	7500
	H.C.Nut	Khanor	200	30000
2017-18	Lichens	Chalora	183.65	91825
	Rhododendron	Kashmiri Patta	12	1800
	<i>Potentilla nepalensis</i>	Dori Ghas	15	1875
	<i>Valeriana wallichii</i>	Mushbala	1.5	900
	Aseculus	Khanor	300	45000
	<i>Salvia moorscotiana</i>	Thuth	19	3800
Total			1716.15	423520
2018-19	Rhododendron	Kashmiri Patta	50	7500
	Lichens	Chalora	5	2500
	Khanor Seed	Khanor	90	13500

	Lichens	Chalora	32	16000
	Aseculus	Khanor	30	4500
	Lichens	Chalora	14.3	7150
	Lichens	Chalora	38	19000
	Lichens	Chalora	28	4200
	Lichens	Chalora	8	4000
	Aseculus	Khanor	80	12000
	Dori Grass	Dori Ghas	22	2750
	<i>Potentilla Neplensis</i>		35	4350
	Total		432.3	97450
2019-20	Barberries Roots	Kashmal	450	90000
	Lichens	Chalora	32	16250
	Lichens	Chalora	12	6000
	<i>Gardiana diversiofoloia</i>	Bichhubuti	24	3600
	Lichens	Chalora	45	29500
	Total		563	145350

(Source: - Record of DFO, Anni.)

1.18 Slate Quarries:

The Right Holders are permitted to remove stones, slates free of charge from the quarries recorded as such in the revenue record for construction and roofing of their houses. Thenon Right Holders are not permitted. The state Industries department also auction certain quarries inspite of objections from the Forest Department and do a great damage to the Forest by dumping huge debris from the slate and stone quarries making the reproduction of Forest species impossible.

However, it is advised that while handling the cases of slate quarries, the settlement report is required to be perused through alongwith the directives of the Hon'ble Supreme Court of India in Writ petition (Civil) No. 202/1995 as well as provisions of Forest conservation Act 1980.

1.19 Leaf Mould:

Right to remove leaf mould locally called as "Chhain" from all Forests except those under regeneration. The practice of excess scrapping of leaf mould is most injurious to the growth of trees and soil fertility. The continuous removal leads to the depletion of nitrogen producing material from the soil.

1.20 Phat burning:

The villagers have recorded Rights of burning in III class Forests. The burning of the same area year after year does not improve the quality of the grass, but on the other hand, inferior grasses take hold of the ground replacing superior ones. The phats are required to be burnt in the presence of the Forest Guard and in the months of January and February. The provision is not adhered to and 'Phats' are not burnt in an organised way within the specific period and the Forest Guard is seldom informed. Due to such deliberate incendiarism the fires escape into the adjoining Forest areas and adjoining plantations and closed areas and cause considerable damage to the young crop wiping out young regeneration completely. They, thus, prove to be harmful instead of being useful to check summer fires. However the unwanted bushes are controlled to some extent.

The Divisional Forest Officer is entitled to make change in phat burning any particular year on account of special climatic conditions such as early or late rains but the power is not being used at all. Therefore, burning of Ghasni / phat needs to be regulated under the supervision of field staff to avoid incidences of Forest fire.

1.21 Nautors:

Himachal Pradesh government framed 'H.P. Nautor Rules 1968' for grant of pieces of land to needy and landless persons but after the enactment of the Forest (Conservation) Act, 1980, no land was to be given under Nautor except in the Tribal areas where the Government of Himachal Pradesh has relaxed the condition of Forest Conservation Act, 1980 for a period of two years to the scheduled areas of Himachal Pradesh as contained in Notification No. FFE-B-F (5) 2/2002-Pt.IV-loose dated 17/7/2014, Notification No.FFE-B-F (5) 2/2002-Pt.IV-loose dated 23/7/2014 and Notification No.FFE-B-F(4)1/2015 Dated 27 May 2017.

1.22 Encroachments:

With the ever increasing demand of land due to increase in population, encroachments have now become a major problem in the tract. The encroachments are especially on un-demarcated protected Forests including Govt. waste land as declared 'Protected Forest' by the H.P. Govt. notification dated 25th February, 1952, in 3rd class Forest areas which are not measured and as well as on the Demarcated Protected Forest. The Government of H.P vide Notification No. 1-21/71-LSG dated 8/6/1994 empowered the D.F.O's with the power of collector under the H.P Public Premises (Eviction & Rent Recovery Act), 1971 to deal with the cases of encroachments on Forest lands. A copy of the said instructions contained in the Notification is annexed as **Appendix- XXV**. During the last plan period total 1376 Nos in UPFs within area of 372.465 hac and DPF 1 No,) of cases has been registered / challaned in the Court of DFO-Cum-Collector, Anni and the detail of which is tabulated in the Table No 1.10

The list of encroachment cases detected and position of such cases pending and decided in Collector- cum- DFO under HP Public Premises Eviction (Rent and Recovery) Act, 1974 up to date in respect of Anni Forest Division is given in the table No. 1.10.

Table No. 1.10

Position of Encroachments cases in the court of Collector-cum-DFO										
Year	Total No. Of encroachments at the beginning of the year		New encroachments during the year		Eviction Order Passed/Decided by Collector-cum-DFO		Encroachments evicted during the year		Total No. Of encroachments at the end of the year	
	No. Of Cases	Area in Hac.	No. Of Cases	Area in Hac.	No. Of Cases	Area in Hac.	No. Of Cases	Area in Hac.	No. Of Cases	Area in Hac.
1996-97 to 2006-07	Data not available									
2007-08	318	63.7573	16	5.656	N/A	N/A	0	0	334	69.4133
2008-09	334	69.4133	25	4.0404	N/A	N/A	0	0	359	73.4537
2009-10	359	73.4537	9	1.7032	N/A	N/A	0	0	368	75.1569
2010-11	368	75.1569	5	0.522	N/A	N/A	0	0	373	75.6789

2011-12	373	75.6789	4	0.7839	N/A	N/A	115	25.5875	262	50.8753
2012-13	262	50.8753	459	380.7502	N/A	N/A	0	0	721	431.6255
2013-14	721	431.6255	6	0.9106	N/A	N/A	0	0	727	432.5361
2014-15	727	432.5361	1	0.1739	24	3.6336	0	0	728	432.71
2015-16	728	432.71	1393	272.942	103	15.746	48	10.3677	2073	695.2843
2016-17	2073	695.2843	15	0.4613	547	191.9749	244	106.6025	1844	589.1431
2017-18	1844	589.1431	0	0	76	31.7053	66	44.9064	1778	544.2367
2018-19	1778	544.2367	6	0.5849	150	17.0337	72	14.1217	1712	530.6999
2019-20	1712	530.0725	1	0.0026	14	2.4187	0	0	1713	530.0751

The detail of encroachment cases where encroachments in the Forest areas is above 10 Bighas and below 10 Bighas is also tabulated and given in table No. 1.11

Table No:-1.11

Detail of encroachers who have encroached upon more than 10 Bighas of Forest land in Anni Forest Division.

Sr. No	Cases Detected		Cases challaned before court of Collector-cum-DFO, Anni		Cases Decided		Cases Evicted		Balanc as on 30.09.2020	
	No.	Area in Ha.	No.	Area in Ha.	No.	Area in Ha.	No.	Area in Ha.	No.	Area in Ha.
1	50	61.8762	30	40.1693	30	40.1693	28	38.4294	2	1.7399

The encroachment cases where FIR lodged with Police under Section 33 of IFA, 1927 read with Section 447 of IPC as on 31-06-2019 is given in table No:- 1.12

Table No. 1.12

Statement showing the encroachment cases where FIRs lodged with the police under Section 33 of IFA, 1927 read with Section 447 of IPC as on 31-06-2019.

Name of Division	Total FIR registered		Cases in which demarcation/ investigation carried out		Cases filed in judicial court						Total	
					Cases put in Court for trial		Case filed for cancellation Report		Case filed for untraced			
	No.	Area (in Ha.)	No.	Area (in Ha.)	No.	Area (in Ha.)	No.	Area (in Ha.)	No.	Area (in Ha.)	No.	Area (in Ha.)
Anni	459	380.7502	456	225.0052	456	225.0052	-	-	-	-	459	380.7502

1.23 Forest Offences:

The Forest offences in Anni Forest Division are also increasing day by day. The offences of petty nature are compounded. While those of the serious nature are either challaned in the court or registered with the police. On an average, about 86 No.s of Forest offences take place annually in the Anni Forest Division. The total number of Forest offence cases during the plan under revision is tabulated in table no:-1.13

Table No:- 1.13

Year	Opening Balance		Cases detected during the year		Total Cases		Cases Compounded/ FIR Lodged/Challaned		Balance	
	Balance cases of previous year	Amount (Rs.)	No. Of Cases	Amount (Rs.)	No. of Cases	Amount (Rs.)	No. of Cases	Amount (Rs.)	No. Of Cases	Amount (Rs.)
1996-97 to 2010-11	Data not available									
2011-12	118	440852	128	508705	246	949557	161	602684	85	346873
2012-13	85	346873	129	313353	214	660226	68	180446	146	479780
2013-14	146	479780	66	299355	212	779135	112	303698	100	475437
2014-15	100	475437	175	653185	275	1128622	35	146386	240	982236
2015-16	240	982236	134	714524	374	1696760	264	1296011	110	400749
2016-17	110	400749	100	2610212	210	3010961	84	2174890	126	836071
2017-18	126	836071	18	181627	144	1017698	55	282676	89	735022
2018-19	89	735022	32	195995	121	931017	30	151371	91	779646
2019-20	91	779646	76	409463	167	1189109	53	387335	114	801774

(Source: Record of DFO, Anni.)

1.24 The Forest (Conservation) Act, 1980:

In the year 1980, Forest (Conservation) Act was promulgated which has made it mandatory to seek permission of the Central Government for diverting any Forest land for non-Forestry purpose. Thus Forest land cannot be diverted to any non-Forestry use without prior approval of Govt. of India under Forest (Conservation) Act, 1980. Instructions have been issued from time to time to all field officers to ensure that no non-Forestry activity is allowed to be implemented by any user agency on any Forest land without prior approval of Govt. of India. It is pertinent to mention here that Hon'ble High Court of Himachal Pradesh has also taken a serious

note of violation of FCA, 1980 in the Contempt Petition No. 56/2009 titled as Kuldeep Chauhan V Balbir Singh Thakur dated 28-8-2009 and has directed not to undertake the construction of any road in Forest areas without the mandatory permission under the FCA, 1980. Therefore, field functionaries must ensure that no work related to non-Forestry activities should be allowed to be taken up without prior approval of Govt. of India under FCA, 1980. During the last plan period total 647.3166 hac. UPFs Forests have been diverted under the provisions of the Forest (Conservation) Act, 1980 and the details of the cases is tabulated and given in the Table No. 1.14 and the FCA cases approved and CA stipulation thereof is also tabulated and given in table No. 1.15

Table No. 1.14
Forest land diverted under FCA in

Sr. No.	Year	Name of the Proposal	Proposal No.	Date of Final Approval	Area involved
1	1996-97	C/o Soidhar-Biungal road	NA	08-08-1996	0.9
2		C/o Kandagai-Nither road		9-306/96-ROC dt.	3.00
3	1997-98	C/o Bagipur-Jaon road		24-10-1997	2.92
4		C/o Link road to Village Shalog		20-01-1998	0.677
5		C/o Nirmand –Arsoo from Junction Luhri-Dalash at junction Jajar		6/1997	6.08
6	1999-00	C/o Kufridhar Jaterh road		14-07-1999	2.52
7	2000-01	C/o Anni –Basta road		22-09-2000	2.58
8	2001-02	C/o Bakhnow-Deori –Chiterkut road		13-12-2002	1.20
9	2005-06	C/o New Military Station Averi		14-02-2006	20.88
10	2004-05	C/o Chatti-Tunan by Kasholi road		23-03-2005	6.714
11		C/o Avera-ghatuvai Pipal Hatti road		14-01-2005	3.15
12	2005-06	C/o Koil-Nither road		04-01-2006	6.093
13	2004-05	C/o Ranbag-Lagouti		23-03-2005	1.467
14	2005-06	C/o Kandugad-Patarna road		02-01-2006	3.5
15		C/o Nanavati-Lagouti		02-06-2005	2.80
16		Bagipul-Sarahan road		07-04-2005	2.60
17		Sechi-Mini HEP		28-04-2005	1.06
18	2006-07	Khanvi-Bansha road		02-03-2007	2.427
19		Shush-Balu(vaiFanounti) road		06-10-2006	3.408
20		Luhri-Dalash-Chowai road Portion Gugra to Gaon- Now (Kather-jaon)		24-10-2006	1.05
21		Shahni-GulatuptoRopru		24-10-2006	1.044
22	2007-08	Link road to Village Rechi to KhAnni		20-06-2007	0.465
23		Bhakan -Kharga		13-03-2006	2.316
24		Link road Kanathach -Kushwa		06-02-2007	3.69
25		Charmin -Oddidhar		15-02-2007	1.88
26		Bus stand cum work shop Anni		27-12-2006	0.3948
27		Rampur HEP 434 MW		07-04-2006	69.3762
28		Runa-Thanog road		24-10-2006	1.767
29		Gugra-Kutwa road-		02-03-2007	3.6

30	2007-08	Brow-Randal (Vai Poshna road)		20-12-2007	3.798
31	2006-07	Luhri-Pipal Dhar		30-11-2006	7.356
32		Haripur –Taluna road		15-02-2007	1.089
33		Rechathach-Shagagi road		02-03-2007	1.08
34		Panar-Jabu road		15-02-2007	1.239
35		Ranabag-Deori KotVaijaibag road		13-03-2007	2.49
36		Chouradhar-Paneovai Zehra road		15-02-2007	3.357
37	2009-10	Bashad-Sharsha		02-03-2010	4.76
38	2007-08	Chunagai-Bari upto Chaniage road		15-02-2007	1.236
39		Pajenda-Bijali ShamAnni – Darad		15-02-2007	2.63
40		Nirmand-Bahwa (Arsu-Bahwa road)		30-03-2007	2.66
41		Link road Moin		12-02-2007	0.83
42		Nouni-Rahnu-Kolth-Kanda-Katmore		15-02-2007	2.52
43		Kandalal-Forbog road		15-02-2007	1.173
44		Jaon-Taralavai Ladagi road		15-01-2007	1.661
45		Karshaigad-Karshala road		25-04-2007	1.527
46	2006-07	Augmentation of W.S.S. to Anni town		2-12-2006	0.12
47	2007-08	Rest House Kungash		20-03-2008	0.161
48		Sinvi-Muhan		31-08-2007	1.332
49	2009-10	Chowaidhar-Thachwi		17.03.2010	1.674
50		Anni-Behna HEP		28.01.2010	0.1806
51		Behna HEP		28.01.2010	0.5456
52	2008-09	Shamsher SHEP		04-04-2008	1.932
53		Anni-II-Mini ABBP		30.12.2008	1.86.99
54	2009-10	KasoliAdit		28.05.2009	0.274
55	2011-12	Farbog to Thach		15.02.2012	1.194
56		Galed to Boong		15.02.2012	1.885
57		KhadirBavli to Jundu		15.02.2012	1.483
58		Runa-Jundwa		15.02.2012	2.491
59		Aug. WSS Village Brow to Khatlugad Kasholi		04.01.2012	0.0121
60		Kandugad-Jaon		21.02.2012	5.835
61		Sharoo to Kapti		16.02.2012	5.766
62		Panetanal to Bishal		16.02.2012	1.974
63		Chaklot to Chunagai		16.02.2012	2.766
64	2012-13	Bakhnaon-Dugha Shagan.		20.04.2012	3.94
65		Chimny-Mundhdal		02.07.2012.	0.906
66		Pali to Prantla		02.07.2012.	1.008
67		Nalti-TharwavaiArsooAmtua		10-09-2012	1.77
68		Kanvi to Dasholi		30.08.2012	1.203
69		Thans to Dasholi		30.08.2012	1.398
70		Perinala to Dawarch Khogwa		30.08.2012	4.96
71		Kurpun Hydro Electric Project. (5MW)		08.03.2013	4.836
72	2013-14	Power Grid Corporation of India		03.04.2013	10.5068
73		66 KV line Kumarsain to Nogli		13.05.2013	3.51
74		Kathar to Khadvi road		14.05.2013	2.62
75		Dawah to Badari road		14.05.2013	1.979

76		Rumali to Deem road		22.05.2013	2.475
77		Punan to Gada Deem road		22.05.2013	4.506
78		Tharla to Sagofa road		07.06.2013	2.169
79		Arsoo to Kundakod road		21.06.2013	1.935
80		Sh. Satya Pal Thakur Mining/ stone quarry		21.06.2013	1.00
81	2014-15	Widening of Wazir Bowali Averi		08-07-2014	2.2
82		66KV transmission line from Baragaon- Nigan.		25.10.2014	4.9887
83	2015-16	Jaon-oddidhar road		18.06.2015.	1.247
84		Jharal to Upparbehri		27.08.2015	0.28
85	2016-17	C/O GSSS Ladhagi		04.04.2016	0.5294
86	2017-18	Widening of NH 305		03.04.2017	3.856
87	2018-19	Kandagai - Saur		17.01.2019	2.099
88		Luhri Project Stage-1		28.03.2019	98.1004
89	2019-20	66KV Transmission Line from Kotla to Bagipul		30.05.2019	36.4344

(Source: - Anni Forest Division)

Table No. 1.15

Statement showing FCA cases approved and CA stipulation thereof.						
S.No	Name of the proposal	Approved letter No	Date of approval	Area diverted in hac.	CA stipulation in hac.	Amount deposit towards CA scheme
1	C/o Soidhar-Biungal road	RECORD NOT AVAILABLE	08-08-1996	0.9	RECORD NOT AVAILABLE	RECORD NOT AVAILABLE
2	C/o Kandagai-Nither road	RECORD NOT AVAILABLE	9-306/96-ROC dt.	3.00	RECORD NOT AVAILABLE	RECORD NOT AVAILABLE
3	C/o Bagipur-Jaon road	RECORD NOT AVAILABLE	24-10-1997	2.92	RECORD NOT AVAILABLE	RECORD NOT AVAILABLE
4	C/o Link road to Village Shalog	RECORD NOT AVAILABLE	20-01-1998	0.677	RECORD NOT AVAILABLE	RECORD NOT AVAILABLE
5	C/o Nirmand –Arsoo from Junction Luhri-Dalash at junction Jajar	RECORD NOT AVAILABLE	6/1997	6.08	RECORD NOT AVAILABLE	RECORD NOT AVAILABLE
6	C/o Kufridhar Jaterh road	9-629/98-roc/1495 DATED 14.07.1999	14-07-1999	2.52	5.04	117500
7	C/o Anni –Basta road	9-HPB353/2007-CHA/752 dt. 22.09.2000	22-09-2000	2.58	5.25	129500
8	C/o Bakhnaw-Deori –Chiterkut road	9-1396/ 2002-ROC/1849 dt 31.12.2002	13-12-2002	1.20	2.5	58400
9	C/o New Miltray	F.No.8-145/2002-FC dt.	14-02-2006	20.88	42	2643750

	Station Averi	14.02.2006				
10	C/o Chatti-Tunan by Kasholi road	9-2136/2004-ROC dt 23.03.2005	23-03-2005	6.714	13.5	518000
11	C/o Avera-ghatuvaiPipalHatti road	9-2272/04-ROC/279 DT. 14.01.2005	14-01-2005	3.15	6.5	267800
12	C/o Koil-Nither road	9-HPB/1877/2003 dated. 04.01.2006	04-01-2006	6.093	15	1141500
13	C/o Ranbag-Lagouti	9-2305/04-ROC/1460 DT. 23.03.2005	23-03-2005	1.467	3	127500
14	C/o Kandugad-Patarna road	9-HPB2313/2004-CHA dt. 02.01.2006	02-01-2006	3.5	7	303750
15	C/o Nanavati-Lagouti	9-HPB2309/2004-CHA/2886-89 dt. 02.06.2005	02-06-2005	2.80	5.6	240500
16	Bagipul-Sarahan road	F.No.9-584/1998-ROC dt 07.04.2005	07-04-2005	2.60	6	259300
17	Sechi-Mini HEP	F.No.9-2055/204-ROC dated 28.04.2005	28-04-2005	1.06	2.25	204000
18	Khanvi-Bansha road	9-HPB2118/2004-CHA/1971 dt. 02.03.2007	02-03-2007	2.427	5	240100
19	Shush-Balu (vai Fanounti) road	9-HPB2348/2004-CHA/4677 dt. 06.10.2006	06-10-2006	3.408	7	303750
20	Luhri-Dalash-Chowai road Portion Gugra to Gaon- Now (Kather-jaon)	9-HPB496/98-CHA/5242 dt. 24.10.2006	24-10-2006	1.05	2.5	120450
21	Shahni-Gulat uptoRopru	9-HPB089/2006-CHA dt. 24.10.2006	24-10-2006	1.044	2	91000
22	Link road to Village Rechi to KhAnni	9-HPB2312/2004-CHA dt. 20.06.2007	20-06-2007	0.465	1	66400
23	Bhakan -Kharga	9-HPB149/2005-CHA dt. 30.11.2006	30.11-2006	2.316	5	
24	Link road Kanathach -Kushwa	9-HPB121/2005-CHA dt. 06.02.2007	06-02-2007	3.69	7.5	324800
25	Charmin -Oddidhar	9-HPB106/2006-CHA 1422 dt. 15.02.2007	15-02-2007	1.88	4	185000
26	Bus stand cum work shop Anni	F.No.9HPB1434/2002-FC dated 14.02.2006	27-12-2006	0.3948	5	48200
27	Rampur HEP 434 MW	8-114/2005 dt. 07.04.2006	07-04-2006	69.376 2	139	7450000
28	Runa-Thanog road	9-HPB239/2006-CHA dt. 02.01..2006	24-10-2006	1.767	3.6	180300
29	Gugra-Kutwa road-	9-HPB2450/2004-CHA/1984 dt. 02.03.2007	02-03-2007	3.6	7.25	324800
30	Brow-Randal (Vai Poshna road)	9-HPB088/2005-CHA dt. 20.12.2007	20-12-2007	3.798	7.6	366500
31	Luhri-Pipal Dhar	9-HPB400/2005-Cha/6257	30-11-2006	7.356	15	649600
32	Haripur –Taluna road	9-HPB711/2006-CHA dt. 15.01.2007	15-02-2007	1.089	2.2	118700
33	Rechathach-Shagagi road	9-HPB947/2006-CHA dt. 02.03.2007	02-03-2007	1.08	2.2	110200

34	Panar-Jabu road	9-HPB770/2006-CHA dt. 15.01.2007	15-02-2007	1.239	2.5	133200
35	Ranabag- DeoriKotVaijaibag road	9-HPB904/2006-CHA dt. 13.03.2007	13-03-2007	2.49	5	254000
36	Chouradhar- Paneovai Zehra road	9-HPB768/2006-CHA/1429 dt. 15.02.2007	15-02-2007	3.357	6.75	349300
37	Bashad-Sharsha	9-HPB754/2006-CHA/4894 dt. 02.03.2010	02-03-2010	4.76	9.52	885265
38	Chunagai-Bari uptoChAnniage road	9-HPB754/2006-CHA dt. 15.2.2007	15-02-2007	1.236	2.5	120600
39	Pajenda-Bijali Shamani – Darad	9-HPB767/2006-CHA dt. 15.02.2007	15-02-2007	2.63	5.5	265300
40	Nirmand-Bahwa (Arsu-Bahwa road)	9-HPB744/2006-CHA dt. 30.03.2007	30-03-2007	2.66	5.5	265300
41	Link road Moin	Ft. 48-1260/2006 dt. 12.02.2007	12-02-2007	0.83	2	96500
42	Nouni-Rahnu-Kolth- Kanda-Katmore	9-HPB766/2006-CHA dt. 15.02.2007	15-02-2007	2.52	5.25	253200
43	Kandalan-Forbog road	9-HPB1009/2006-CHA/1412 dt. 15.02.2007	15-02-2007	1.173	2.35	125000
44	Jaon-Taralavai Ladagi road	9-HPB690/2006-CHA/566 dt. 15.02.2007	15-01-2007	1.661	3.25	169400
45	Karshaigad-Karshala road	9-HPB1238/2006-CHA/4035 dt. 25.04.2007	25-04-2007	1.527	3.1	158925
46	Augmentation of W.S.S. to Anni town	FFE-B-(2)-192/2006 dated 02.12.2006	2-12-2006	0.12	0.25	22838
47	Rest House Kungash	9-HPB201/2007-CHA dt. 20.03.2008.	20-03-2008	0.161	0.5	22838
48	Sinvi-Muhan	9-HPB175/2007-CHA/8729 dt. 31.08.2007	31-08-2007	1.332	2.67	121990
49	Chowaidhar- Thachwi	9-HPB353/2007-CHA dt. 17.03.2010	17.03.2010	1.674	3.5	325465
50	Anni-Behna HEP	9-HPB627/2008-CHA/528 dt. 28.01.2010	28.01.2010	0.1806	0.5	46500
51	Behna HEP	9-HPB628/2008-CHA/533 dt. 28.01.2010	28.01.2010	0.5456	1.25	116000
52	Shamsher SHEP	9-HPB782/2007-CHA dt. 04.04.2008	04-04-2008	1.932	4	182950
53	Anni-II-Mini ABBP	9-HPB019/2008-CHA dt. 31.12.2008	30.12.2008	1.86.99	3.8	353400
54	KasoliAdit	8-114/2005-FC DT. 28.05.2009	28.05.2009	0.274	2	186000
55	Farbog to Thach	9-HPB223/2010-CHA dt. 15.02.2012	15.02.2012	1.194	3	341091
56	Galed to Boong	9-HPB215/2010-CHA dt. 15.02.2012	15.02.2012	1.885	4	454786
57	KhadirBavli to Jundu	9-HPB203/2010-CHA dt. 15.02.2012	15.02.2012	1.483	3	341091
58	Runa-Jundwa	9-HPB202/2010-CHA dt. 15.02.20127	15.02.2012	2.491	5	568485
59	Aug. WSS Village Brow to Khatlugad Kasholi	48-2257/2011-(FCA) DT 04.01.2012	04.01.2012	0.0121	0.025	2842
60	Kandugad-Jaon	9-HPC217/2010-CHA dt. 21.02.2012	21.02.2012	5.835	11.70	1330300
61	Sharoo to Kapti	9-HPC222/2010-CHA dt. 16.02.2012	16.02.2012	5.766	12	1364400

62	Panetanal to Bishal	9-HPB221/2010-CHA dt. 16.02.2012	16.02.2012	1.974	4	454800
63	Chaklot to Chunagai	9-HPB188/2010-CHA dt. 16.02.2012	16.02.2012	2.766	6	682182
64	Bakhnaon-DughaShagan.	9-HPB212/2010-CHA dt. 20.04.2012	20.04.2012	3.94	8	909576
65	Chimny-Mundhdal	9-HPB185/2010-CHA dt. 02.07.2012	02.07.2012.	0.906	2	227394
66	Pali to Prantla	9-HPB201/2010-CHA dt. 02.07.2012	02.07.2012.	1.008	2	341091
67	Nalti-Tharwava iArsoo Amtua	9-HPB398/2010-CHA dt. 10.09.2012	10-09-2012	1.77	3.60	378115
68	Kanvi to Dasholi	9-HPB208/2010-CHA dt. 30.08.2012	30.08.2012	1.203	2.50	393750
69	Thans to Dasholi	9-HPB646/2010-CHA dt. 30.08.2012	30.08.2012	1.398	3	472500
70	Perinala to Dawarch Khogwa	9-HPB499/2010-CHA dt. 30.08.2012	30.08.2012	4.96	11.65	1575000
71	Kurpun Hydro Electric Project. (5MW)	9-HPB916/2010-CHA dt. 08.03.2013	08.03.2013	4.836	10	
72	Power Grid Corporation of India		03.04.2013	10.5068	24	3307500
73	66 KV line Kumarsain to Nogli	9-HPB813/2012-CHA dt. 13.05.2013	13.05.2013	3.51	9.50	974952
74	Kathar to Khadvi road	9-HPB031/2012-CHA dt. 14.05.2013	14.05.2013	2.62	5.50	866250
75	Dawah to Badari road	9-HPB205/2010-CHA dt. 14.05.2013	14.05.2013	1.979	4	630000
76	Rumali to Deem road	9-HPB037/2012-CHA dt. 22.05.2013	22.05.2013	2.475	5	787500
77	Punan to Gada Deem road	9-HPB036/2012-CHA dt. 22.05.2013	22.05.2013	4.506	9	1417500
78	Tharla to Sagofa road	9-HPB207/2010-CHA dt. 07.06.2013	07.06.2013	2.169	4.50	708750
79	Arsoo to Kundakod road	9-HPB214/2010-CHA dt. 21.06.2013	21.06.2013	1.935	4	
80	Sh. Satya Pal Thakur Mining/ stone quarry	9-HPB500/2011-CHA dt. 21.06.2013	21.06.2013	1.00	0.6563	315000
81	Widening of Wazir Bowali Averi	9-HPB192/2010-CHA dt. 11.08.2011	08-07-2014	2.2	4.5	708750
82	66KV transmission line from Baragaon-Nigan.	9-HPB960/2011-CHA dt. 23.09.2014	25.10.2014	4.9887	4	1575000
83	Jaon-oddidhar road	9-HPB-213/2010-CHA-6772 dt 18.06.2015	18.06.2015.	1.247	2.50	
84	Jharal to Upparbehri	9-HPB-218/2010-CHA-4107 dt 27.08.2015	27.08.2015	0.28	0.28	24250
85	C/O GSSS Ladhagi	FT48-2969/2015 dt 04.04.2016	04.04.2016	0.5294	0.5294	210850
86	Widening of NH 305	8B/HP/06/44/2016/01 dated 03.04.2017	03.04.2017	3.856	7.712	1275565
87	Kandagai - Saur	HB/HP/06/125/2017/FC/2159 DATED 17.01.2019	17.01.2019	2.099	2.099	931895
88	Luhri Project Stage-1	F.No. 8-48/2018-FC dated 28.03.2019	28.03.2019	98.1004	100	18914456
89	66KV Transmission Line from Kotla to Bagipul	8B/HP/04/40/2018/FC/495 dated 30.05.2019	30.05.2019	36.4344	48	9707544

(Source: - Anni Forest Division)

1.25 The Inhabitants:

The people of the tract are hardworking and tough. The main occupation is Agriculture as well as Horticulture and rearing of sheep and Goat for their livelihood. The holdings are marginal and small by and large. The number of people with large holdings is very few. The fields are situated on hilly slopes in terraces and flat fields are rarely met with. The population is generally scattered over villages and in small hamlets. The biggest village of the area is Nirmand which has developed into a town now. Anni is the other town in the tract. On the right bank of Satluj River and opposite to the Rampur town, Brow and Jagaat Khana are developing where many buildings have come up. Most of the population lives in the villages. In the recent time, large network of road has been constructed and most of the villages are now connected with link roads. Main motorable roads in the tract are Jalori Pass to Luhri, Samshar -Chowai, Dalash to Jajjar; Luhri Jajjar- Nither-Duraha and Bazir Bawari-Nirmand-Bagipul-Urtoo-Bandal road.

People use to live in houses generally made of wood in two storeys; the ground floor is used to keep Animals and cattle while the upper storey is used for the family members as dwelling place but due to urbanization and network of road, the old dwellings are now being replaced with RCC structures. The local inhabitants are now constructing “Pakka houses” having well developed drainage and sanitation system. However, in the areas where stone of good quality is available is used to make walls along with timber. In areas where slates are available within economical distances used for roofs, other-wise timber planks are used as roof cover especially in the interior & far flung areas.

The people are religious and have a blind faith in the local deities called "Devtas" and "Devis."

The following account shows the religious places of the tract: -

- **Paneo Nag:** People worship the deity near FRH Paneo in 1/35 Paneo, where fair is held during September every year.



(Summer and Winter view of Paneo Nag Temple)

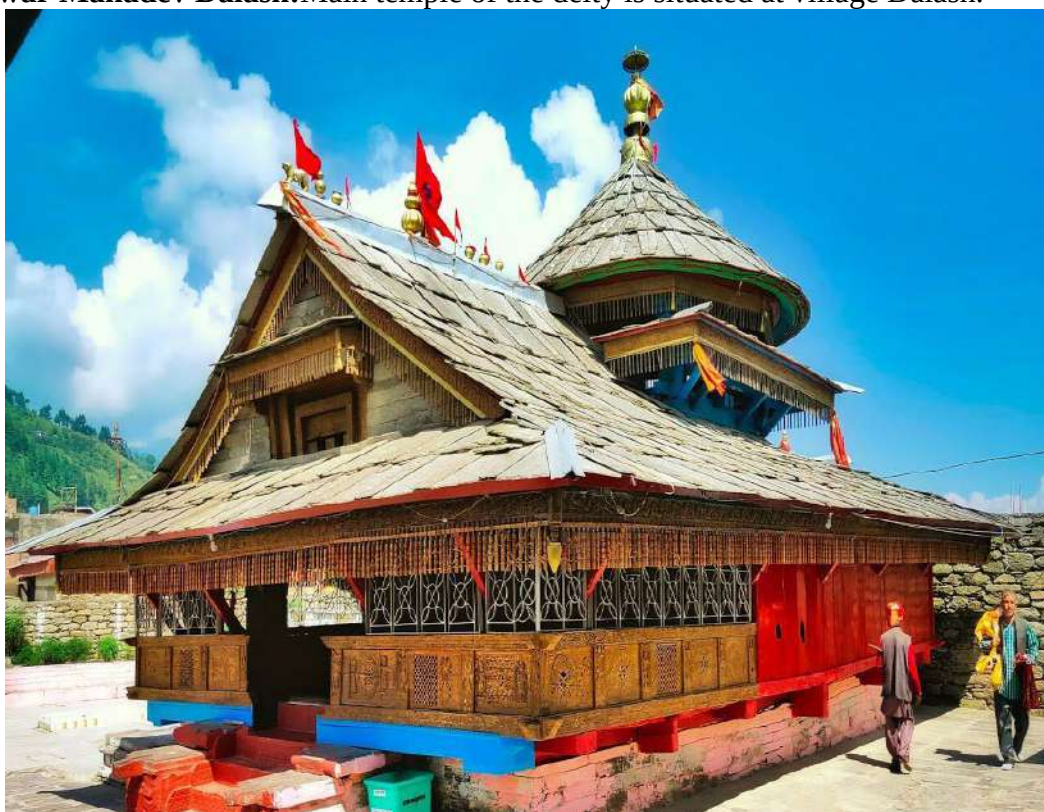
Generally the deity is kept in another temple at Kungash. People have got immense faith in Him.

- **Shamsher Mahadev:** In Shamsher village 3 Kilometers from Anni the temple of deity is situated on Anni-Jalori Road.



The fair is held at Anni in the month of May every year in the name of the deity when people dance and worship.

- **Jogeshwar Mahadev Dalash:** Main temple of the deity is situated at village Dalash.



The fair is held every year during August-September.

- **Kasumba Mata Temple at Khagsu:** It is Situated 3 Kilometers from Luhri on Luhri Dalash road. There is immense faith of the local people in the Goddess.
- **Chambu Devta:** The main temple is situated at village Urtoo and fair is held during June every year.
- **Shana Hrishi Devta at Sarahan:** Main temple is situated at Sarahan village of the "devta". Fair is held during April every year.
- **Natli Nag:** The temple is situated in 1/3 Ramgarh Kandi and worship the Nag Devta.
- **Sh. Parshu Ram Temple & Ambika Mata Temple:** The both temples are situated in Nirmand. In these Temples people worship the deities in large numbers.

- **Budhi Nagin Mata Temple:** This temple is situated amidst Kharshu Oak forests which is about 3 Kilometers from Jalori Pass.

The local inhabitants worship Nagin Mata and offer the first skimmed 'Ghee' of the cow and later on; the Ghee is utilized by them. It is also a tourist spot and most of the tourist visits this place during summer season.

- **Khudi Jal Devta Temple:** This temple is situated about 25 Kilometres from Anni on Showad-Baru Road. During the Kullu Dusshera, the local deity is invited to participate in the festival. The local inhabitants assemble during the month of August to take the blessing of Devta Sahib Khudi Jal which is famous festival of the locality.



1.26 Recent Development:

1.26.1 MGNREGA: The National Rural Employment Guarantee Act, 2005 was passed on September 2005. The Act came into force on February 2, 2006 and was implemented in a phased manner. The objective of the Act is to provide for the enhancement of livelihood security of the households in rural areas of the country by providing at least one hundred days of guaranteed wage employment in a financial year to every household whose adult members volunteer to do unskilled manual work. The law was initially called the NREGA but was renamed as MGNREGA on 2 October, 2009. A Job Card will be issued by the Gram Panchayat to the Household that has been registered. The Job Card should be issued immediately upon completing verification i.e. within a fortnight of the application for registration. If a worker who has applied for work is not provided employment within fifteen days from the date on which work is requested, an unemployment allowance shall be payable by the State Government at the rate prescribed in the Act. The responsibility for payment of unemployment allowance shall be with the Programme Office. At least 50% of the works in terms of cost in a Gram Panchayat will be allotted to Gram Panchayat for execution. This is the statutory minimum and the Programme Officer or the District

Programme Coordinator may allot more if deemed feasible. The Ministry has set up a comprehensive monitoring system. For effecting, monitoring of the project 100% verification of the works at Block level, 10% at the District. Level and 2% at the State level inspections need to be ensured.

This scheme was introduced in H.P. in 2008 and a meeting was held on 11-06-2008 by Secretary. Rural Development & Necessary decisions were taken:-

- i) The Forest Department through its field functionaries submitted their shelf of projects to the Gram Sabha through BDO concerned. Schedule 1 under section 4(3) of the Act provides for the following works that can be included under MGNREGA. The focus of the scheme shall be on the following works in their order of priority.
- ii) Water conservation and water harvesting.
- iii) Drought proofing (including Afforestation and tree plantation.
- iv) Irrigation canals including micro and minor irrigation works.
- v) Provision of irrigation facility, plantation, horticulture, land development to land owned by households belonging to the scheduled Castes and Scheduled Tribes, or to land of the beneficiaries of land reforms, or that of the beneficiaries under the Indira AwasYojna /BPL families.
- vi) Renovation of traditional water bodies including de-silting of tanks.
- vii) Land development.
- viii) Flood control and protection works including drainage in water logged areas.
- ix) Rural connectivity to provide all-weather access. The construction of roads may include culverts where necessary, and within the village area may be taken up along with drainages.
- x) Any other work which may be notified by the Central Government in consultation with the State Government.
- xi) Live fencing work to protect crops from wild life depredation as suggested by the Govt. of India, Ministry of Rural Development (MGNREGA Division) dated 5th July,2012 shall be followed.

As indicated above, all works are subject to prior approval by the Gram Sabha and Panchayat Samiti / Zila Parishad. The Forest Department in this case is required to prepare a shelf of projects and submit to the Gram Sabha through Block Development Officer. As soon as the shelf of projects is approved by Gram Sabha the same is forwarded to Panchayat Sameetee and Zila Parishad for approval.

The Range officer is appointed as nodal officer for the implementation of MGNREGA Programme at field level in their respective Forest Division. The operational guidelines alongwith the Act are available on Government of India web site www.nrega.nic.in. The copies of brochure on MGNREGA are available in the Directorate of Rural Development and Panchayati Raj Department; the same can be collected for reference as and when required.

1.26.2 Green India Mission: The National Mission for a Green India was announced by Dr. Man Mohan Singh, the then Prime Minister of India as one of the eight Missions under the National Plan on Climate Change (NAPCC). It recognizes that climate change phenomenon will seriously affect and alter the distribution, type and quality of natural biological resources of the country. The NAPCC addresses the urgent and critical concerns of sustainable development and identifies the close linkage of the economy with its natural resource base, and cautions that climate-sensitive sectors such as Forestry may face a major threat because of the projected changes in climate. This will have repercussions for livelihoods of people in general, and Forest dependent communities in particular. The Green India Mission therefore puts the “greening” in the context of climate adaptation and mitigation, aiming to enhance ecosystem services like carbon sequestration and storage (in Forests and other ecosystems), hydrological services and biodiversity; along with provisioning services like fuel, fodder, timber and NTFPs.

The Central Govt. has put in place a National Mission for a Green India as part of the country’s National Action Plan for Climate Change with a budget of Rs. 46,000 crores (approx. USD 10 billion) over a period of 10 years. The overarching objective of the Mission is to increase Forest and tree cover in 5 m hac. and improve quality of Forest cover in another 5 million hac. Thus, the Mission will help in improving ecosystem services in 10 million hac. of land, and increase flow of Forest based livelihood services to, and income of about 3 million Forest dependent households, and enhances annual CO₂ sequestration by 50 to 60 million tones in the year 2020. The Mission is innovative in several respects:

- i) First, it proposes a fundamental shift from our traditional focus of merely increasing the quantity of our Forest cover, towards increasing its quality and improving provision of ecosystems goods and service.
- ii) Second, the Mission proposes to take a holistic view of greening, not merely focus on plantations to meet carbon sequestration targets. There is a clear and more important focus on enhancing biodiversity, restoring ecosystems and habitat diversity.
- iii) Third, there is a deliberate and major focus on autonomy and decentralization. The Mission will be implemented through an autonomous organizational structure with a view to reducing delays and rigidity, while ensuring accountability.
 - a) Local communities will be at the heart of implementation, with the Gram Sabha as the overarching institution overseeing Mission implementation at the village-level. The Joint Forest Management Committee would be revamped as Committees of the Gram Sabha. This is in consonance with the fact Forests are a source of livelihood for over 200 million people in the country, and hence centrality of their participation is critical.
 - b) A key innovation is the idea of engaging a cadre of young ‘Community Foresters’, most of whom will be from scheduled tribes and other Forest dwelling communities, to facilitate planning, implementation and monitoring of Mission activities at local level.

1.26.3 Time Frame: The actual implementation period of the Mission would spread over 10 years, coinciding with 12th and 13th Five Year Plan period, 2011-12 will be taken as the preparatory phase of the Mission. Thus, the Mission will have a preparatory phase, a first phase (five years) and a second phase (five year). Actual field operations will take place from 2012-13.

The preparatory phase of the Mission will be utilized for carrying out the reforms, setting up the Mission organization, leveraging resources for the Mission, identification of sub-

landscapes/areas for Mission intervention, identification of partners, creating awareness across multiple stakeholders, setting up/revamping and strengthening of institutions to improve decentralized Forest governance, sensitizations of Forest department/multiple agencies, and Forest dependent communities, capacity building of staff and the communities, commissioning of research/assessment etc. The Mission would consider getting many of these actions in the preparatory phase as conditionally before funding could flow for implementation which is reproduced as under:

1. Centrality of Gram Sabha for improved Forest Governance

- i) The Gram Sabha and the bodies set up by it to be the key institutions to plan and implement the Mission activities at the village level.
- ii) Revamping of JFMCs as bodies of the Gram Sabha.
- iii) Legal empowerment of the bodies of the Gram Sabha, including the revamped JFMCs to protect, regenerate and sustainably manage Forests. Thus could be done under Indian Forest Act and Forest (Conservation) Act, 1980. Provisions to acknowledge such bodies of the Gram Sabha would need to be made in Panchayat Act by respective States.

2. Revamped FDA's to strengthen decentralized Forest governance

- i) The FDAs would be revamped as institutions contributing to decentralized Forest governance.
- ii) The FDAs, at the district/division level, would be positioned as democratic and inclusive institutions, chaired by an elected representative instead of a Government official. Representative of federations of local bodies including revamped JFMCs/Forest committees of Gram Sabha and SHG federations to be represented in decision making body in the FDA at division level.

3. Strengthening Front Line Formation in Forest Department

- i) The existing vacancies of the front line staff (FG to RFOs) need to be filled on a priority basis during the preparatory phase of the project. A 10 year perspective plan of recruitment and capacity building must be put in place to ensure continuous inflow of new recruits.

1.26.4 State Action Plan: The State Action Plans could dwell on State specific details for Mission interventions. These Action Plans will also be required to propose a clear roadmap for Forest governance reforms. The State Action Plan will need to be developed using an inclusive process, engaging the Forest Department, line agencies, civil society organizations and community groups etc. The State Action Plans will draw convergence with overall State Climate Action Plans.

1.26.5 State CAMPA: Whereas the Forest land/Govt. land is diverted for non Forestry purpose under FCA, 1980, user agency has to deposit the value of NPV, CA and CAT Plan in the State CAMPA account as per proposal approved by the MoEF, GoI. These funds have to be spent to maintain ecological and environmental losses caused by the user agency it may be site specific or otherwise. To make this procedure in uniform manner in all over the country, MoEF, GoI has instructed to form State CAMPA vide letter No. 1-58/09-MoS (I/c)-E&F dated 15/7/2012. To comply the instruction MoEF, GoI Govt. of Himachal Pradesh vide notification no. FFE-B-F (2)-

72/2004-Pt-II dated 3/8/2009 has constituted “State Compensatory Afforestation Fund Management and Planning Authority” (hereinafter referred to as State-CAMPA) as an instrument to accelerate activities for compensatory Afforestation, preservation of natural Forest management of wild life infrastructure development and allied works. Its prime task is to regenerate natural Forests and building up the institution engaged in this work. HP Forest department would be modernizing to protect and regenerate the Forests and wild life habitat.

The state CAMPA is constituted to promote i) Afforestation and soil and water conservation suitable for Himachal Pradesh, ii) conservation, protection, regeneration and management of existing natural Forests iii) CA and CAT Plan activities & environmental activities. The function of state CAMPA also include funding, overseeing and promoting CA, CAT Plan, watershed works and wildlife conservation.

The money available with the State CAMPA will be utilized towards the development, maintenance and protection of Forests and wild life management and 2% of the amount has to spend on monitoring and evaluation of the expenditure occurred.

State CAMPA releases the funds to the field officers as per the Annual Plan of Operation finalized. The State CAMPA is functioning through a Governing Body, a steering committee and Executive committee. Governing body is consisting of Chief Minister as Chairman, Forest Minister as Vice Chairman and Pr. CCF as Member Secretary along with other members. Steering Committee consisting of Chief Secretary as Chairperson, Addl. Pr. CCF (CAT) as member secretary along with other members. Executive Committee consisting Pr. CCF as chairperson and Nodal officer as Member secretary along with other members. Steering committee lay down or approve the rules and procedure for functioning of body and executive committee, monitoring the progress of the utilization of funds, approve the APO prepared by Executive Committee and annual reports audit accounts of the State CAMPA. Executive Committee takes all steps to run the State CAMPA as per procedure laid down by the Steering Committee. All the works under CAMPA fund shall be executed by field functionaries at Divisional Level under the over all administrative/financial control of Executive Committee. They shall be responsible to prepare the APO and get the approval of APO from the Steering Committee and also to monitor the progress of the utilization of funds released by the State CAMPA.

The Government of Himachal Pradesh vide its Notification No.FFE-B (F) 2-73/97 dated 23-10-2002 as per **Appendix-XXVIII** had constituted Upper Satluj Valley Watershed Development Society for the implementation CAT Plan of all the Hydel projects coming up or in existence, in Satluj Valley basin. Later on this society became defunct and the GOHP had constituted “Satluj Valley Watershed Development Society, Rampur in place of Upper Satluj Valley Watershed Development Society, Rampur. Now the Govt. of Himachal Pradesh vide its Notification No. FFE-B-F(1)2/2010 dated 5th May, 2012 (as per **Appendix-XXIX**) has decided that the society will cease functioning w.e.f. 30.06.2012 and Catchment Area Treatment Plan & Compensatory Afforestation (CA) etc. of all Hydro-Electric Project in Satluj basin will be implemented through the concerned Conservator of Forests. Further, the balance funds pertaining to the implementation of CAT Plan etc. lying in the accounts of society shall be transferred to bank account CAMPA. Now the funds are directly coming through concerned Treasury w.e.f. 01.04.2020. Due to this decision the works proposed will be executed in time bond manner.

1.27 Scheduled Tribes & other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006:

The Central Govt. came out with legislation namely “The Scheduled Tribes & other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006”. The objective of the Act

has been set out in the Preamble to the Act which read that this is “an Act to recognize and vest the Forest Rights and occupation in Forest land in Forest dwelling scheduled tribes and other traditional Forest dwellers who have been residing in such Forests for generations but whose Rights could not be recorded, Forest Rights on ancestral lands and their habitat were not adequately recognized in the consolidation of State Forests during the colonial period as well as in independent India, and to address the long standing in security and access of Forest Rights. The Act is divided into six chapters spread over 14 sections. The Ministry of the Central Government dealing with Tribal Affairs or any officer or authority authorized by the Central Government in this behalf shall be nodal agency for the implementation of the provisions of the Act. The Act also empowers the Central Government to issue directions and make rules for carrying out the provisions of the Act and rules framed there under scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Rules, 2008.

In pursuance of the Central Act, the Govt. of Himachal Pradesh has already been implemented this Act in three districts of Tribal Areas of the State in the first phase since 2008. Now the Government of Himachal Pradesh has decided to implement this Act in whole of the State with immediate effect vide notification No. TD (A)-3-1/2011 Loose dated 27-3-2012. The copies of the said Act and Rules are available on website www.ForestRights.gov.in.

Himachal Pradesh is a unique State among the Indian States and having no Forest villages as like other states in India. In M.P, Jharkhand, Chhattisgarh, Orissa, A.P, Tamil Nadu, West Bengal, Maharashtra and North-Eastern States tribal population live in Forest villages but possesses no Rights and ownership to the land they cultivate generations, as these are the Forest land, as per Govt. record. They are primarily resided in Forest and who solely dependent on Forests or Forest land for their bonafide livelihood needs or their survival. Whereas in State of Himachal Pradesh, tribal's and other Forest dwellers hold private land in revenue villages in their own name under the well settled laws i.e. H.P. Land Revenue Act, 1954 and well recorded Forest Rights under the provision of Indian Forest Act, 1927. Thus there are no tribal's or group of people or Forest dwellers or other people in state of H.P as like other states in India who are dwelling in Forest areas and occupation on Forest land for generation. There is much difference between occupation and encroachment on Forest land and also difference between basic needs or necessity of Forest produce for cultivating agricultural land and economy who dependent on Forest produce directly or indirectly and dependent on Forests or Forest land for their bonafide livelihoods needs or survival who primarily reside in Forest and dependent on Forest land or Forest and occupation of land since generation.

After the enactment of this act in Anni Forest Division, the number of cases sanction is tabulated in the table No:- 1.16

Table No:- 1.16

Area diverted under FRA 2006 under section 3(2)						
S. No.	Year	Name of Proposal	Sanction No. & Date	Extent of area diverted (ha.)	Kind of Area	
					DPF	UPF
1	2016-17	GSSS Building Twar	2218 dated 08.08.2016	0.3067	0	0.3067
2	2016-17	Road to Village Kot	2236 dated 10.08.2016	0.926	0	0.926
3	2016-17	Road from Shalog to Dugha	4397 dated 15.12.2016	0.5744	0	0.5744
4	2016-17	Tractor Road from Jharohnu to Lohal	4389 dated 15.12.2016	0.25	0	0.25

5	2016-17	Road from Bagipul to Baga	44718 dated 04.01.2017	0.618	0	0.618
6	2016-17	ITI Building Dalash	4680 dated 04.01.2017	0.326	0	0.326
7	2016-17	GSSS Building Shilli Janja	4677dated 04.01.2017	0.21	0	0.21
8	2016-17	Powar Point Electricity) Dhanudhar	4992 dated 23.01.2017	0.04	0	0.04
9	2016-17	Road from Sharandhar to Shai	5297 dated 09.02.2017	0.663	0	0.663
10	2016-17	Road from Shimani to Samdal	5304 dated 09.02.2017`	0.387	0	0.387
11	2016-17	Water Tank Lambidhar C-120	5388 dated 15.02.2017	0.25	0	0.25
12	2016-17	Road from Bargaidhar to Shai	5697 dated 02.03.2017	0.39	0	0.39
13	2016-17	Community Center at Luhri	5744 dated 06.03.201 7	0.1052	0	0.1052
14	2016-17	Road from Dandidhar to Khashaini	5740 dated 06.03.2017	0.99	0	0.99
15	2016-17	Road from Khanorti to Village Jawa	6064 dated 23.03.2017	0.149	0	0.149
16	2016-17	Road Khamru to Bhaghiri	6219 dated 28.03.2017	0.0575	0	0.0575
17	2016-17	Link Road to Patrogi	6214 dated 27.03.2017	0.0937	0	0.0937
18	2016-17	C/O building for dispensary	6272 dated 29.03.2017	0.162	0	0.162
19	2016-17	G.SSS Shwad	6312 dated 30.03.2017	0	0	00.79.70
20	2017-18	O/O Road from Moin to Gothna	301 dated 22.04.2017	0.984	0	0.984
21	2017-18	C/o Road from Moin to Chayun	298 dated 22.04.2017	0.951	0	0.951
22	2017-18	Link Road to Village Anas	708 dated 27.05.2017	0.0728	0	0.0728
23	2017-18	Road from Barvi to Jundwa	712 dated 27.05.2017	0	0	00.42.00
24	2017-18	Pipeline to habitation of GP Jaban / Namhong	725 dated 27.05.2017	0.036	0.036	0
25	2017-18	C/O TREACTER Road Main Road Darot to Village Seen	1008 dated 19.06.2017	0.49	0	0.49
26	2017-18	C/o Ambulance road Vilagge Gora To Bakhun via CharAnni	1003 dated 19.06.2017	0.15078	0	0.15078
27	2017-18	C/o Of Tractor Road Latanda to Dhawansh	1112 dated 24.06.2017	0.445	0	0.445
28	2017-18	C/o Road from Punan toTipal Dal	1379 dated 15.07.2017	0.0569	0	0.0569
29	2017-18	C/o Tractor Road from Khushigad to TipparAirm	1608 dated 07.08.2017	0.3	0	0.3
30	2017-18	C/o Road From Jikhati to Thogi	1613 dated 07.08.2017	0.8	0	0.8
31	2017-18	C/o Trakter Road Kalali to Shallbag	1623 dated 08.08.2017	0.55	0	0.55
32	2017-18	C/o Link road Thandap Anni to Sarahan	1880 dated 07.09.2017	0.88	0	0.88
33	2017-18	C/O Tractor road Badari to Tadaru	2222 dated 04.10.2017	0.2488	0.2488	0
34	2017-18	C/o School for differently able Children at Averi	2290 dated 07.10.2017	0.9237	0	0.9237
35	2017-18	C/o Tractor road from Kimti to	2354 dated	0.3317	0	0.3317

		Chari	12.10.2017			
36	2017-18	C/o 22 KV electrical lines & control point at Dalash	3335 dated 04.01.2018	0.0526	0	0.0526
37	2017-18	C/o Veterinary Hospital building at Kungash	3475 dated 11.01.2018	0.021	0	0.021
38	2017-18	C/o Examination Hall GSSS Kothi	3699 dated 22.01.2018	0.252	0	0.252
39	2017-18	Ambulance Road from Main road Naun to Gujjarbasti	3889 dated 05.02.2018	0.1052	0	0.1052
40	2017-18	C/o Strengthening of GHS to GSSS Sarahan	4143 dated 17.02.2018	0.3314		0.3314
41	2017-18	C/o LWSS to NC/PC hab Deem, Dobha and Marheri etc. in GP Kot and Arsu in Nirmand Block	4139 dated 17.02.2018	0.162	0	0.162
42	2017-18	C/o Tractor road from Ghain to Dunji	4168 dated 17.02.2018	0.61	0	0.61
43	2017-18	c/o Building Govt. SSS Jaon	4544 dated 09.03.2018	0.3322	0	0.3322
44	2017-18	C/o Road Bagash to Billa Rishta	4765 dated 17.03.2018	0.8575	0	0.8575
45	2017-18	C/o Road Dingu Nalla to Shaila Panni	4809 dated 20.03.2018	0.62	0	0.62
46	2017-18	c/o Tractor road from Dogrimod to Dogri	4898 dated 23.03.2018	0.102	0	0.102
47	2017-18	c/o Tractor road from Kiran Bazar to Teshan	4902 dated 23.03.2018	0.198	0	0.198
48	2017-18	C/o Tractor road from Shai to Shurladhar	4929 dated 24.03.2018	0.954	0	0.954
49	2019-20	C/o Road from Nigan to Dogri	389 dated 27.04.2018	0.6258	0	0.6258
50	2019-20	C/o Road Sisri to Batot	578 dated 08.05.2018	0.936	0	0.936
51	2019-20	C/o Ambulance road Village Ghorla to Bouri	659 dated 16.05.2018	0.2833	0	0.2833
52	2019-20	C/o Ambulance road Shamani to Shildhar	665 dated 16.05.2018	0.95	0	0.95
53	2019-20	C/o Ambulance to Main road to Ashnal	713 dated 19.05.2018	0.7524	0	0.7524
54	2019-20	C/o Amubulance road Mungri to Baseri Kuttal	717 dated 19.05.2018	0.8373	0	0.8373
55	2019-20	C/o Tractor road from Jagher to Kuffardhar	709 dated 19.05.2018	0.1415	0	0.1415
56	2019-20	C/o Tractor road from Shural to Chaunkri	958 dated 28.05.2018	0.357	0	0.357
57	2019-20	C/o Tractor road from Gharatdhar to Kandidhar	1856 dated 05.07.2018	0.2144	0	0.2144
58	2019-20	C/o Road from Sisri to Patarna	2107 dated 21.07.2018	0.687	0	0.687
59	2019-20	C/o Tractor road from Rai Nalla to Tilru via Chualamb GP Karad	2113 dated 21.07.2018	0.81	0	0.81
60	2019-20	C/o Ambulance Road from Dawr to Dagsari in Kohila Beat	2522 dated 21.08.2018	0.684	0	0.684
61	2019-20	C/o PWSS for dried up sources of village of GP Tunan, Poshna, Bahwa & Kharga affected due-20 to C/o Rampur Hydro Electric Project in Nirmand Block	2640 dated 28.08.2018	0.9797	0	0.9797
62	2019-20	C/o Ambulance Road from Shiladhar to Barogi in Gad Beat	2919 dated 19.09.2018	0.104	0	0.104
63	2019-20	C/o Proposed link road from odhthai to GPS Chillagi	2978 dated 20.09.2018	0.994	0	0.994

64	2019-20	C/o Link road from Shalog to Village Laut Dugha Km 0/0 to 1/700Km	3478 dated 17.10.2018	0.48	0	0.48
65	2019-20	C/o Road Deogad to Khalair under HPPWD	3677 dated 31.10.2018	0.5136	0	0.5136
66	2019-20	C/o Ambulance road form Sharu to Badari	3917 dated 14.11.2018	0.48	0	0.48
67	2019-20	C/o Tractor road from Kai to Miun Nala	4255 dated 05.12.2018	0.2467	0	0.2467
68	2019-20	C/o WSS to village Thalari, Balindi, Deyogietc in GP Sarahan	4329 dated 10.12.2018	0.02	0	0.02
69	2019-20	C/o WSS to village Bagipul, Khobernag, GHS Bagipul from Chhenchi Nala in Nirmand Block	4388 dated 12.12.2018	0.01	0	0.01
70	2019-20	C/o Tractor road from MukhyaSadak to Birlagran GP Behana	4651 dated 26.12.2018	0.02	0	0.02
71	2019-20	C/o WSS to NC/PC Hab in GP Shilli&Chowai	5682 dated 04.02.2019	0.55	0	0.55
72	2019-20	C/o Tractor road from Kundri to BillaTinber	6223 dated 27.02.2019	0.3883	0.3883	0
73	2019-20	C/o WSS Shaila Bona, Sarga and Kushwa, Kindla in GP Sarga and Kushwa in Nirmand	6299 dated 02.03.2019	0.084	0	0.084
74	2019-20	C/o Ambulance road from main road KeadsShishwa to Shaud in GP Bahwa	6312 dated 05.03.2019	0.5	0	0.5
75	2019-20	C/o Link road from main road Kalog to Tirmidhar KM 0/00 to 1/465KM	6304 dated 02.03.2019	0.9063	0	0.9063
76	2019-20	WSS to PC Habtation Arsu and Arsu Town in GP Arsu in Nirmand Block Distt. Kullu HP	6396 dated 07.03.2019	0.04	0	0.04
77	2019-20	Pirli mod to Tuni (Urmu) road Gram Panchyat Palehi	6473 dated 08.03.2019	0.3681	0	0.3681
78	2019-20	C/o road from Sinvi to Dharta	6474 dated 08.03.2019	0.9	0	0.9

(Source:- Anni Forest Division)

1.28 Forest-PLUS Programme:

In September, 2010, USAID and Government of India signed a 5 years partnership agreement to promote scientific and technical collaboration and exchange, with a goal of conserving Forests and improving sustainability to address climate change. In July, 2012, USAID awarded Tetra Tech a five year technical assistance contract for Forest-PLUS programme. This technical assistance was to support GOI activities and strengthen capacity for reducing emissions from Deforestation and Forest Degradation (REDD+) implementation. Working in collaboration with Ministry of Environment, Forest and Climate Change (MoEF & CC), the local Governments and local communities. The purpose of this assignment was to evaluate the performance of the United State Agency for International Development (USAID), Partnership of Land Use Science (Forest-PLUS) program in India, specifically, the programs relevance, effectiveness, efficiency, potential sustainability and likelihood of impact. The main aim of the programme was:

- To develop and deploy scientific tools and methods for improved sustainable landscapes or ecosystem management, Forest carbon inventory and monitoring.

- To design modalities to provide better incentives to Forest dependent communities for Forest Management and Conservation.
- To enhance human and institutional capacity to the Forestry Sector.

The focus districts of Forest-PLUS programme are located within the States of Madhya Pradesh, Himachal Pradesh, Karnataka and Sikkim. The team also visited in Rampur Forest Division, Kotgarh Forest Division and Anni Forest Division of Rampur Forest Circle. The team has submitted their evaluation report during 2018. The evaluation addressed the following five aspects along with their findings in the report:

1. Improving Forest Management and carbon monitoring.
2. Building institution capacity.
3. Identifying factors helping or hindering achievements.
4. Promoting long-term carbon sequestration and reduced Greenhouse Gas (GHG) emissions.
5. Addressing Gender issues and identifying key lessons and recommendation.

The final recommendations are:

- Future USAID programme should continue the highly successful practice demonstrated by Forest-PLUS to consider Gender when designing activities based on the particular social conditions of the state or community where activities are to be implemented.
- Future USAID programme should ensure both men and women are involved in decision making about distribution of programme resources within the community.

1.29 Ek Butta Beti Ke Naam:

The Himachal Pradesh Govt. vide its notification No. FFE-B-F (5)/2019 Dated 20th September, 2019 has notified this scheme which is being implemented in the state. The main objectives of this scheme are to sensitize the communities by planting a sapling in the name of a girl child and with effort of nurturing each sapling into a tree. This scheme also aims at to sensitize the communities about both the fragile gender balance and the ecological balance. Further to motivate the communities to pledge to nurture both the girl child and the sapling, giving them the opportunity to grow to their full potential. By implementing this scheme, it will increase the green cover of the state through plantation of sapling every year.

In this scheme, upon the birth of the girl child anywhere in the state, the Forest Department will gift five saplings to each family, to be planted in their homestead/land or adjoining forest land or Samriti Vatika. The Forest Department will also provide a kit to the family containing instructions for plantation and maintenance, a tree guard (as per requirement) a package of vermi compost and a name plate with new born's name painted on it. The detailed instructions are given in the Himachal Pradesh Govt. notification No. FFE-B-F (5)/2019 Dated 20th September, 2019. This scheme is also being implemented in Anni Forest Division from 2019-20. The total outlay for implementing this scheme was 5.00 Lakh and for this year the financial outlay 7.47 Lakh.

1.30 Vidyarthi Van Mitra Yojna:

This is also a new scheme which has been notified vide the Himachal Pradesh Govt. vide Notification No. FFE-B-F (5) 8/2018 dated 20th August, 2018. The main aim of this scheme is for creating awareness amongst the school children about protection of forests and environment through their active plantation and protection. The scheme also

envisages strengthening participation of local communities in conservation and development of forests through plantation of useful plant species in the pipeline. The prime goals of this scheme is to take advantage of this fact by inculcating awareness among the school children about the importance of forest and environmental conservation by actively involving them in raising and protection of forest plantations and thereafter motivating them to act as agents of change through dissemination of this awareness among people at large. Another objective of this scheme is to inculcate a sense of attachment in students towards nature conservation. This will indirectly help to enhance the forest cover in the state through plantation. The detailed instructions regarding implementation of this scheme are given in the above cited notification. This scheme is also being implemented in Anni Forest Division w.e.f. 2017-18. The total financial outlay during the 2020-21 is Rs. 1.16 Lakh.

1.31 Van Samridhi – Jan Samridhi:

This scheme envisages enhancing the economic returns to the rural households, engaged in collecting and selling of Non-Timber Forest Produces (NTFPs) including medicinal plants through intervention at strengthening the wild NTFPs resource base and improving post harvest handling, value addition and marketing. The Himachal Pradesh has a privilege in having bountiful of NTFPs in its Forests spread across the different agro-climatic zones. In Himachal Pradesh, as per Forest Settlement Rights, the local communities have got right to collect NTFPs from forests for domestic use and for trade. Some of the NTFPs has got good commercial demand and are traded to the different markets outside of the state.

This scheme of Himachal Pradesh Govt. titled “Van Samridhi-Jan Samridhi, 2018 aims at to strengthen the NTFPs resource base in the state through active participation of the Govt. and capacity building of Community User Groups (CUGs) in sustainable harvest, post harvest handling and value addition to the wild harvesting NTFPs for enhancing their economic returns.

The major components of the scheme are as under: -

a) Identification and formation of Community User Groups (CUGs)

Identification and formation of CUGs by the Biodiversity Management Committees and formation of clusters for capacity building & other works.

b) Allocation of forest areas to CUGs

Allocation of forest areas to each CUG and involving them NTFP resource strengthening in the allocated forest areas.

c) Multilayered augmentation plantations to strengthen NTFP resource base

Strengthening of resource base of NTFPs by CUGs in identified forest areas in vicinity, through multi-layered augmentation plantations/cultivation of native NTFP & medicinal species. For this nurseries of various NTFP species shall be developed.

d) Harvesting, postharvest handling and developing marketing facilities

Standardizing wild harvest and postharvest handling methods viz. cleaning, drying, grading, packaging, certification, etc., for select NTFP species and setting up facilities for postharvest handling and value chain development at select pilot locations. Development of marketing facilities.

e) Developing Geo-Indicating brand name

Developing a common Geo-Indicating brand name for the select NTFPs & creating data base as well as literature.

The initial period of the scheme has been kept as 20 years (April, 2018 to March 2038), keeping in view the long term plan for effective results and to afford opportunity to the participating Community User Groups (CUGs) for effective involvement and benefit sharing from the scheme. The detailed instruction with regard to implementation mechanism of the scheme is contained in the Himachal Pradesh Govt. Notification No. **FFE-B-F (5)-4/2018 Dated 18th September, 2018**. This scheme is also being implemented in Anni Forest Division w.e.f. 2018-19. The total financial outlay during the 2020-21 is Rs. 1.94 Lakh.

1.32 Samudayik Van Samvardhan Yojana:

This scheme was launched during 2017 and the main aim of the “**Samudayik Van Samvardhan Yojna**”(SVSY) scheme is to strengthen participation of local communities in conservation and development of forests through plantation useful plant species. The major objectives of the scheme are as follow: -

- Scheme shall aim to provide maximum economic benefit to the member of JFM/VFDSs in the form of valuable Forest Products and other usufruct yielding high economic returns in the market as well as productive usage water.
- To improve the flow of ecosystem service from the forest around villages through community based management of the designated forest.
- To enhance the forest cover in the state on forest land lying in the vicinity of villages through planting of tree species of local importance.
- To rejuvenate the traditional village level institutions related to conservation and sustainable use of natural resources through awareness, education and organization of village communities.

1.32.1 Key components of the scheme:

- Identification of suitable open degraded forest area around selected villages for development into forest through active participation of participating Community User Groups
- Strengthening of the capacity of the selected community user groups in development and long term management of forests over the designated forest land.
- Planting the suitable tree species of local importance to ensure sustained and enhanced flow of ecosystem services to the participating community user group.
- Facilitating development of community user group based mechanism towards sharing of ecosystem services from the designated forests and building capacity of the community user groups for putting such mechanisms in place

1.32.2 Scheme Period:

Forestry being a long gestation activity, this scheme will be operated on a long-term basis as it will form an integral part of forest management in the State. Initially the Scheme is being launched with a plan period of 25 Years. However, to build in the learnings from the implementation of the scheme, the scheme will be reviewed in the 10th year and necessary modifications if any would be incorporated. The Management Plan

developed under the scheme will be formulated for an initial period of 5 years and shall be revised every 5 years.

The detailed instructions for implementing this scheme are give in the Himachal Pradesh Govt. Notification **No. FFE-B-F (5)9/201 Dated 5th September, 2018.** This scheme is also being implemented in Anni Forest Division w.e.f. 2017-18. The total financial outlay during the 2020-21 is Rs. 10.78 Lakh.

CHAPTER II

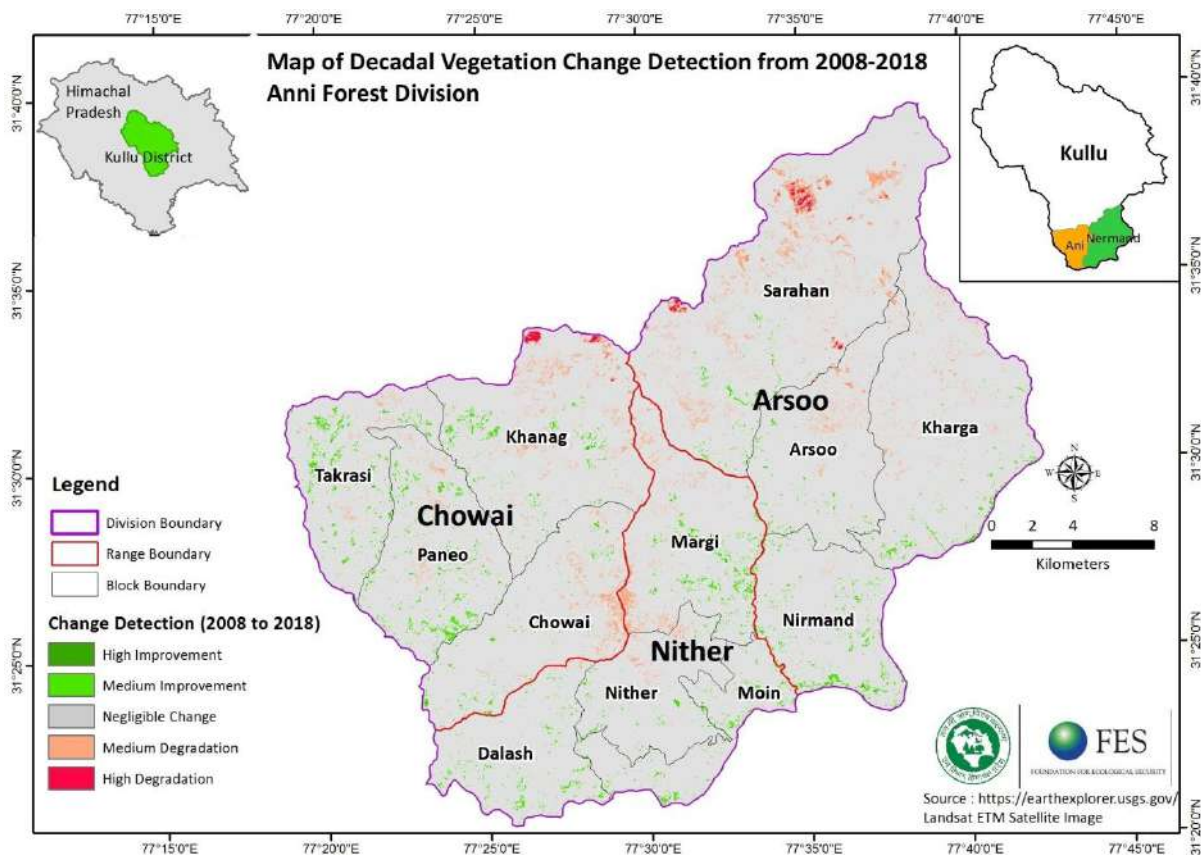
FLORA AND FAUNA

CHAPTER II A - FOREST FLORA:

2. A.1 Introduction:

The tract has rich history of flora both in variety and extent. The so-called all round development over the past has adversely affected the flora of the tract. The forests of the tract comprise of *Pinus roxburghii* (Chil), *Pinus wallichiana* (kail), *Cedrus deodara* (Deodar), *Abies pindrow* (Silver fir), and *Picea smithiana* (Spruce) as coniferous and *Quercus incana* (Ban), *Quercus dilatata* (Mohru), *Quercus semecarpifolia* (Kharsu). Besides a number of other trees are found in the tract, list of which is given in glossary.

The hills are usually devoid of these species below 800m of elevation except along the banks of the streams where scattered Shisham trees are found. Pure chil forests are found of western slopes, where as Chil mixed with ban is found on cooler aspects on elevations ranging from 800m to 2000m. However, on the right bank of river Satluj in 15/20 area the slips are mainly covered with grass land and Chil forests start comparatively from a higher elevation of about 1100m. Between 1500m to 2100m elevation there are some pure Ban oak Forests of Northern slopes. Middle elevations are occupied mainly by Deodar and kail while at high elevations from 2400m to 3000m Spruce and Silver Fir are the predominant coniferous species. Higher up kharsu oak is found upto 3600m scattered as well as in extensive patches. Some Birch mixed with Kharsu oak is also found in the upper limits. Over 3600m elevation, trees are gradually replaced by scrubby growth of evergreens like *Rhododendron* spp (Brass) species, ultimately merging into grass lands and finally to permanent snow line.



2. A.2 General Description of the Growing Stock:

The tract of Anni Forest Division falls in Sub-Tropical Zone with respect to its location from the equator. Because of its location in Himalayas and consequently great variation in altitude from 738 Mtr. to 5227.7 Mtr. combined with topographical condition including in aspect the tract embraces climatic zones of sub tropical, temperate and Alpine. Therefore, various types of Forests from sub tropical to Alpine occur in Outer Seraj at various places. The aspect, slope ecology and the edaphic factors influence the type of vegetation giving rise to local variations in the general altitudinal zonations.

Generally on all altitudinal zones various Forests types are found but aspect slope moisture and soil play a great role in local variations. From the lower zone to the higher zone, Chil Kail, Deodar, Spruce and silver Fir are conifers found in the Forests of Anni Forest Division. The various broad leaved species like Walnut, Aesculus, Alnus, Acer, Bird cherry etc. are found along the Khads and nallas in the valleys. Pure Forests of Kharsu Oaks are located in the higher reaches while Mohru Oak in the middle and Ban Oak in the lower zones.

Alongwith Silver Fir and Kharsu Oak few scattered Betula is found. In the lower-most zone particularly along the river Sutlej, Shisham trees are found scattered. The detailed description and composition of crop of each Forest compartment and sub compartment has been prepared and is available with the compartment history files.

On the basis of the classification, the Forest has been classified in the following 'types' according to "A revised survey of the Forest type of India" by H.G Champion and S.K Seth.

Group 5.1.5b C-II- Northern Dry Deciduous Forests

Group 9 Subtropical pine Forests:

C-1- Himalayan Sub-Tropical Pine Forests

C:I.b Upper or Himalayan Chil Pine Forests

SI- Himalayan Sub Tropical Scrub

S2- Sub-tropical- Euphorbia Scrub

Group 12 Himalayan moist temperature Forests:

C-I Lower west Himalayan Temperate Forests

C.I.a Ban Oak Forests (*Q. leucotrichophora*)

C-1 (b) Mohru Oak Forests (*Q. dilatata*)

C.I.c Moist Deodar Forests (*Cedrus deodara*)

C.I.d Western Mixed Coniferous Forests (Spruce, Blue pine, Silver Fir)

C.I.e Moist Temperate Deciduous Forests

C.I.f Low level Blue Pine Forests (*P. wallichiana*)

C-2 Upper West Himalayan Temperate Forests

C.2.a Kharsu Oak Forest (*Q. semicarpifolia*)

C.2.b West Himalayan Upper Oak/ Fir Forests:

DS I Montane Bamboo brakes

DS 2 Himalayan Temperate park land

DS 3 Himalayan temperate pastures

ISI Alder Forests.

Group 14 Sub Alpine Forests

C.1 West Himalayan Sub-Alpine Birch/Fir Forests

C.I a West Himalayan Sub-Alpine high lying Fir Forests

C-I (b) West Himalayan Sub-Alpine Birch Fir Forests

DSI Sub-alpine pastures.

Group 15

Moist Alpine Scrub Forests

C.1 Birch/Rhododendron Scrub Forests

Deciduous Alpine Scrub

E1 Dwarf Rhododendron Forests

C 3 Alpine Pastures

Group 5

5b C-II-Northern Dry Deciduous Forests:

This type is found to a limited extent along Satluj River near Behna and Luhri. Scattered *Cedrela toona*, *Dalbergia sissoo*, *Pistacia integerrima* and *Bombax ceiba* are met with. Under growth is that of *Adhatoda vasica*, *Murraya koenigii*, *Carissa opaca*.

Group 9 Subtropical pine Forest: C-1 Himalayan Sub-tropical pine Forests

C.1.b Upper or Himalayan Chil Pine Forests:

This type occurs at the lower altitude ranging between 1000 mts. to 2000 mts.elevation in 2/6 Gadamawa, 2/3 Siarunal, 15/20-III, Bindraban, Narayangarh-III, 1/8 Lohr, 1/17 Gohan, 1/36 Paleini Chalaon of Arsu, Chowai and Nither Ranges respectively. This type occurs on quartzite formation more or less as a pure crop of Chil in the top canopy with occasional Broad Leaved trees in the middle canopy and sparse undergrowth. It gradually merges into dry scrub Forests in Chowai and Nither Ranges and gives way to the temperate broad leaved and Conifer Forest above. The pre dominant species along the coniferous is Chil pine *Pinus roxburghii*. It forms open, poor quality crops on the hot southern aspect on rocky and shallow soils. But on the northern aspect there are few good patches of poles and middle ages crops in all kind of Forests viz Ist class, 2nd class and III class, The crop is generally irregular and mature trees are few and scattered except in recently raised established Chil plantation where the crop is even aged. Admixtures of other

species occur along the upper limits as well as lower down in the streams and damp nallas. The common associates are *Quercus incana*, *Rhododendron arborium*, *Pieris ovalifolia*, *Pyrus pashia*, *Bauhinia variegata*, *Albizzea spp.*, *Pistacia integririma*, *Lyonia ovalifolia*, etc. The common shrubs found are *Zanthoxylum armatum*, *Rosa mosqueta*, *Rubus ellipticus*, etc. The associates may occur either in light admixture or occasionally may form an under storey in the pine Forests. Kail (*Pinus wallichiana*) and sprinkled Deodar (*Cedrus deodara*) makes its appearance in the upper reaches and is sometimes extending into Chil areas in the cooler aspect as is noticed in the 15/20-III Forests of Arsu Range.

Higher up and under a more regular canopy bush growth is less rampant and some *Desmodium spp.*, *Berberies spp* and *Indigofera spp* are found with *Plectranthus rugosus*, *Elsholtzia polystachya* and other composite as the common herbs. On the southern aspect the shrubby undergrowth is very light due to regular burning and grazing.

DS-I Himalayan Sub tropical Scrub Forests:

The extensive growing areas used as grazing grounds and hay fields by the villagers forms this Forest type. They are spread over in between Chil forest in the Chil zonation. There is frequent burning and large scale burning hence this type forms regressive seral stage. Malformed scattered Chil trees are found with scrub species like *Dodonaea viscosa*, *Rhus parviflora*, *Woodfordia floribunda*, and *Berberis spp*, *Cotoneastor spp.*, *Prinsepia utilis*, *Indigofera pulchella* and *Adiantum spp*. This type occupies the south western aspect in this Division. This type is due to heavy biotic interference of grazing and burning. These areas can be regenerated naturally or artificially by restricting the biotic interference.

DS-II Sub tropical Euphorbia Scrub Forests:

Euphorbia roylana and *Opuntia spp.* constitute this type of Forest which spread along river Sutlej particularly near Luhri, Behna, Khagsu, with *Zizyphus jujuba* and other broad leaved spp. like *Bauhinea variegata* and *Ficus spp.* etc. Different grass species are also found. This type is associated with lime stone formation.

Group 12 Himalayan moist temperature Forests: C-I Lower west Himalayan temperate Forests:

C.1 (a) Ban Oak Forests (*Q. leucotrichophora*):

This type of Forest is spread over in whole Division particularly in depression and is found in small proportion mixed with Chil, Kail and Deodar Forests. It occupies the lower elevation in the northern slope and along nalla. In comparison with other moist temperate type, it occupies drier as well as warmer sites and may be viewed as their least mesophytic form. Geological formation has very little influence on the distribution of the Oak Forest which builds good soil rich in humus. The ground is naturally well drained and the oak occupies really wet soil. This types can be seen in 15/20-III or Arsu Range and 2/21 Patal Forest in Nither, Naraingarh- III in Chowai Range. Top and middle storey consist of *Quercus incana*, *Rhododendron arboreum*, *Lyonia spp.*, *Machilus odoratissima*, *Litsea glitiosa*, *Pieris spp.*, *Ovalifolia hibiscus*, *Ilex dipyrena*, *Pyrus cotinus* and *Pyrus pashia* etc. The undergrowth consists of *Berberis lycium*, *Daphne*, *Desmodium gangeticum*, *Rubus elipticus*, *Indigofera tictoria*, *Viburnum grandiforum*, *Lonicera spp.*, *Strobilanthes kunthiana* etc. The ground consists of *Pteridium spp.*, *Plectranthus spp*, *Salvia glutinosa* and other grasses. The common climbers are *Hydra helix*, *Rosa mosqueta*, *Vitis semicordata* etc.

C 1(b) Mohru Oak Forests (*Quercus himalayana/ dilatata*):

This type is generally found in patches in Deodar Zone ranging from 2000 to 2500 meter and pure Forest of *Quercus dilatata* do not exist in this area. There is greater admixture of secondary species mainly of Deciduous trees in the top storey and a well marked ever green second storey of *Rhododendron* and *Ilex diphyrena*, etc. and Shrubby undergrowth of *Rubus* spp, *Spirea* spp and *Viburnum* spp with some ever green such as *Skimmia laureola* and *Sarcococaa* spp. This type is more mesophytic than Ban Oak which displaces it on dry ridges.

Mohru Oak is generally used as the most popular leave fodder and hence is heavily lopped. This is found in Deodar zone and can be seen near Tharvi village of Arsu Range and 2/28 Jalori Forest Chowai Range.

The upper canopy consists of *Quercus dilatata*, *Q. incana*, *Abies pindrow*, *Aesculus indica*, The middle canopy consists of *Ilex diphyrena*, *Rhamnus frangula*, *Rhododendron arborium*, *Cedrella toona*, etc. The under growth consists of *Rosa macrophylla*, *Berberis* spp, *Prinoscia utilis*, *Indigofera* spp, *Deutzia* spp, *Daphne* spp, *Sarcococaa* spp, etc. The climbers are *Hedera helix*, *Clematis* spp, etc,

C-I(c) -Moist Deodar (*Cedrus deodara*) Forests:

This Forest type is occurring in all the Ranges of the Anni Forest Division and ranging between 1500 meters to 2000 meters. On Northern aspects, it descends down and ascends to even 3000 meters on sunny ridges. The winter snow fall seems necessary for the existence of these Forests.

The Deodar prefers comparatively heavy soil formed by the disintegration of granite rocks and requires well drained soil. It also occurs in all types of soil. The good quality Deodar strands are found on such soils all over the tract and can be seen at 1/5 Kandu Shilla and R/3 Jujuth of Arsoo Range R/4 Margi Kalon, 1/15 Lot Kayon, 1/16 Shilla in Nither Range, R/5 Ghanar, R/6 Jharanu, R/7 Takrasi and R/8 Kaikalon in Chowai Range.

Deodar generally occurs pure but some times mixed with Kail at the lower extremes and spruce on the higher reaches. The pure beautiful Forest of Deodar can be seen in 1/3 Ramgarh Kandi C-I in Arsu Range 1/14 Maharah Kod in Nither Range 1/13 Trijakhhar C-II, 1/27 Bung Bindraban C-II of Chowai Range. The top storey consists of *Cedrus deodara* and *Pinus wallichiana* while the middle storey consists of *Quercus incana* or generally absent. The under storey is generally absent. The under storey consists of *Rosa mosqueta*, *Ulmus wallichiana*, *Berberis* spp., *Lonicera* spp, *Dentzia* spp., *Desmodium* spp., *Viburnum* spp, *Carpinus* spp., *Cedrela serata*, *Juglans regia*, *Aesculus indica*, etc. are found in moist location such as nallas and depressions.

The ground flora consists of *Frageria vesca*, *Galium aparine*, *Viola* spp., *Salvia glutinosa*, *Ainsliaea opera* and *Thymus serpyllum*. The main climbers are *Vitis* spp, *Hedera helix*, *Jasminum officinale* and *Rosa mosqueta*, etc.

C.1 (d) Western mixed Coniferous Forests (Spruce, Blue pine, Silver Fir):

This type is commonly known as mixed Coniferous Forest but it also includes pure Spruce and Silver Fir and mixed Forest of Silver Fir, Spruce, Blue Pine and Deodar. These Forests are the most attractive in the Himalayas with varying mixture of coniferous trees often of a very fine growth, Spruce, Silver Fir, Blue pine and Deodar and a varying inter intermixture of evergreen and deciduous Broad leaved trees and strips, patches of Broad leaved Forests. These Forests lie at an elevation of 2300 to 3200 metres. Spruce predominates in the lower elevation and is associated

with Deodar on spurs. Kail is confined to southern slopes, ridges and shallow soil. In the higher reaches generally Silver Fir comes in the pure crop and Spruce occupying on the ridges and warmer places. Broad leaved trees such as *Aesculus indica*, *Juglans regia* and *Corylus colurna* are found in depression and nallas. In many areas young crop is generally absent and the regeneration is a problem. These Forests are generally found away from the habitation. A thick layer of undecomposed humus is found in the Forest where there is no grazing and inhibits the natural regeneration. Silver Fir and spruce occur on all types of rock formation and soil all over the tract. The *Arundinaria falcata* occurs in these Forests. Rich herbaceous vegetation grows during the monsoon and a variety of Ferns being first to sprout in the spring and shoots of strobilanthes also grow predominantly. Later all these die and completely flatten by the winter snow. Snow stays from December to April. There is also a good deal of Moss and Lichen on the trees and the climbers are not so common. The beautiful Forest of these types can be seen in R/1 Shilligirchi, R/2 Paraligirchi, 2/10 Mul, 2/11 Kaleo, 2/16 Barnagi, R/3 Jujut etc. of Arsu Range, 1/11 Kut(C-II, IIb), 1/12 Drad Reuns of Chowai Range and 2/20 Daman 1/9 Bijuri, 1/8 Lohr, 1/10 Bashad of Nither Range.



(View of 1/3 Ramgarh Kandi Forest, Arsu Range)

The upper canopy consists of *Abies pindrow*, *Picea smithiana*, *Cedrus deodara* and *Pinus wallichiana*. The middle canopy consists of mostly *Quercus semecarpifolia* and other broad leaved species like, *Acer* spp., *Aesculus* spp., *Corylus colurna*, *Juglans regia*, etc. The under growth consists of *Viburnum* spp, *Contoneaster bacillaris*, *Ilex depyrena*, *Lonicera* spp., *Deutzia staminea*, *Corymbosa* spp, *Berberis* spp. *Principia* spp., *Arundinaria* spp., *Sarcococca* spp., *Strobilanthe* spp, *Polygonum* spp, *Polygonatum* spp, *Podophyllum* spp, *Valeriana* spp, *Frageria* spp, *Anemone* spp, *Ferns* and grasses from the underground flora.

The common climbers found are *Hedera helix*, *Vitis* spp, and *Jasminum* spp etc.

C1 (e) Moist Temprate Deciduous Forests:

This type occurs almost in the whole Anni Forest Division in Fir Zone ranging from 1800-2750 meter in moist hollows and depressions often as strips along the hill streams and also on many of the gentle slopes unsuited for coniferous. Such broad leaved patches are found in 2/17 Dadai, 2/18 Rachokri, 2/19 Mandrow of Arsu Range and 2/20 Daman in Nither Range.

The upper canopy consists of *Aesculus* spp, *Acer* spp, *Carpinus* spp., *Ulmus wallichiana*, *Betula* spp., *Juglans regia*, *Fraxinus* spp., *Quercus semecarpifolia*, *Abies pindrow*, *Prunus padus*, etc.

The middle storey consists of *Corylus colurna*, *Cornus capitata*, *Rhus cotinus*, *Taxus baccata* and *Rhododendron arboretum*, *Euonymus* spp.

C-2 Upper west Himalayan Temperate Forests:

C.2 (a) Kharshu Oak Forests (*Q. semecarpifolia*):

This type of vegetation is found in all over the Division varying from elevation of 2700 meter to 3500 meter. Generally the *Quercus semecarpifolia* occupies the ridges on the higher reaches and sometimes constitute pure strips on the top portion of the compartment.

On the Northern aspects and moist location, Kharsu Oak often comes down and is found in mixture with *Silver Fir*, *Spruce* and forms the under storey. In the upper reaches elsewhere it is found mixed with *Rhododendron* and *Betula* spp. All age classes are reproduced and natural regeneration is adequate. The tree is lopped for fodder by graziers mostly and often by villagers. The top canopy consists of *Quercus semecarpifolia*, *Picea smithiana*, *Abies pindrow*, *Acer* spp. and *Betula alnoides*, Middle canopy consist of *Rhododendron compenulatum*, *Ilex depyrena*, *Prunus padus*, *Betula* spp, *Acer* spp., *Taxus bacatta*, etc.



(View of 2/28 Jalori Forests, Chowai Range)

The under growth consists of *Cotoneaster* spp, *Viburnum* spp, *Rosa macrophylla*, *Strobilanthes* spp, *Salix elegans*, *Lonicera augstifolia*, *Rubus niveus*, *Smilax vegineta*, *Berberis* spp., *Jusminum wallichiana*, *Frageria vesica*, *Rumex* spp, *Viola* spp., *Anemone* spp, *Polygonum* spp., etc. The climbers are *Vitis* spp, *Clematis* spp., etc. This type occurs in the Forests such as 2/8 Sanpatu, 2/4 Dobda 2/9 Galol, 2/11 Koleo in Arsoo Range and 2/28 Jalori in Chowai Range.

C.2 (b) West Himalayan Upper Oak/ Fir Forests:

This two storeyed high Forest occurs above 2800 meter elevation all over the tract. Silver Fir occurs singly or in bands and groups over Oak and other evergreen deciduous trees. The Oaks carry a conspicuous mantle of mosses.

Top canopy consists of *Abies pindrow*, *Picea smithiana* and middle canopy consists of *Acer* spp. *Taxus baccata*, *Quercus semecarfolia*, *Pyrus lanata*, *Betula alnoides*, *Quercus dilatata*, *Rhododendron compenulatum*, *Euonymus lacerus*, etc. under growth consists of *Rosa macrophylla*, *Viburnum foetens*, *Rubus niveus*, *Spirea canescens*, *Berberis* spp., *Strobilanthes wallichii*, *Viola serpens*, *Contoneaster acuminata*, *Lonicera augustifolia*, *Salix elegans*, *Jasminum humile*, *Asparagus filicinus*, *Sarcococaa saligna*, *Wikstroemia canescens* and *Skimmia laureola*, etc. Ground flora consists of *Fragaria vesca*, *Ainsliaea latifolia*, *Valeriana wallichii*, *Gallium asperifolium*, *Podophyllum hexandrum*, *Sanecio* spp., *Polygonum speciosum*, *Jurinea macrocephala*, *Aconitum heterophyllum*, *Picorhiza kurroa*, *Salvia moorcraftiana*, *Viola odorata*, etc. and climbers are *Vitis semicordata*, *Hedera nepalensis/helix*, *Shisandra grandiflora* and *Clematis* spp, etc.

This type is found in R/3 Jugut, 2/19 Mandrow, 2/14 Danda 2/15 Dwaridanda of Arsu Range, 1/12 Drad Reuns, 1/23 Olinal, 1/29 Chajal of Chowai Range and 1/9 Bijuri, 1/14 Marahkod of Nither Range.

DS1 Montane Bamboo Brakes:

(*Arundinaria falcata* and *Arundinaria spathiflora*):

These two bamboos occur as undergrowth in the mixed coniferous Forests. *Arundinaria falcata* confines to the lower zone and *Arundinaria spathiflora* occurs in spruce and silver fir zone. They generally occupy moist Northern slopes and form thicket excluding all other shrubs. These hill bamboos are used for basket making by the local inhabitants. Their presence inhibits natural regeneration of main species. This type is found in 2/16 Barnagi R/1 Shilligirchi, R/2 Paraligirchi of Arsu Range, 1/29 Chajala (I, II) of Chowai Range and 2/21 Patal in Nither Range

DS2 Himalayan Temperate Park-land:

This type of Forest is mainly confined to the Fir Zone. These are open park like land with scattered large, mis-shapen and often moribund trees of the species typical of the Temperate Deciduous Forests of without Coniferous trees also over a grassy tuft full of flowers in springs. Generally some *Silver Fir*, *Birdcherry*, *Mapple* and *Kharsu Oak*, Occasional clumps of *Cotoneaster bacillaris*, *Viburnum cotinifolium* and *Berberis* spp. are found. The ground is covered by *Fragaria vesica*, *Anemone* spp., *Viola* spp., *Delphinium* spp., *Polygonum* spp. and *Ranunculus* spp. The grass lands are heavily grazed by Sheep, Goats, Buffaloes and Bulls.

This type is found in 2/19 Mandrow, 2/11 Kaleo in Arsu Range, UPF Jalori of Chowai Range and 1/14 Marahkod of Nither Range.

DS3 Himalayan Temperate Pasture:

This type occurs in Kharsu Oak zone and is characterised by the absence of tree growth. These are grassy blanks devoid of any tree growth. These are found all over the tract in Deodar and Fir zone. The ground flora is the same as under DS2 above. The area is grazed by the grazier migratory as well as local in summer after melting of snow.

The type occurs in the Forests shown under DS2 above.

IS1 Alder (*Alnus*) Forests:

This type is found mainly along the banks of river streams and nallahs all over the tract with or without under-growth depending upon the site. In the lower course of streams where fringe of Alder is the only remaining tree growth there is often an undergrowth of thorny shrubs, while in the better wooded tract progression starts early and other species like blue pine and other coniferous are usually present. This type occurs from 1000 mtrs to 3000 mtrs species grows on fresh alluvial soil and landslides. This type is found along the Kurpan Khad, Anni Khad, and Shamsheer Gad of the tract.

The top storey consists of *Alnus nepalensis*, *Populus ciliata*, *Celtis australis*, *Toona ciliata*, *Morus serrata*, *Ficus* spp. etc. and the middle storey consists of *Crateagus* spp, *Spiraea* spp. and the undergrowth consists of *Gerardiana heterophylla*, *Rumex nepalensis*, *Polygonum polygonatum*, etc. *Vitis* spp. is the main climber species.

Group 14 - Sub Alpine Forests: C.1 West Himalayan Sub-Alpine Birch/Fir Forests:

C.1 (a) West Himalayan Sub-Alpine High level Fir Forests:

This type is found above 3000 mtrs elevation over the whole tract. Fir, Birch and *Rhododendron* may be found mixed in varying proportions. Pure dense crop of Fir may occur but the most usual form is an open crop of Fir with Birch between and a dense under growth of *Rhododendron* with a varying amount of small shrubs in and under the later. The over wood is absent in hollows leaving more or less pure *Rhododendron* spp, *Spruce* spp. and occasional *Quercus semecarpifolia* may be found in this type in the moist zone. Top canopy consists of *Abies pindrow*, *Picea smithiana* while middle canopy consists of *Rhododendron compenulatum*, *Taxus baccatta*, *Prunus padus*, and the undergrowth consists of *Strobilanthes* spp., *Smilax* spp., *Viburnum* spp. and *Deutzia* spp., *Berberis* spp. and *Juniperus wallichiana*. The ground flora consists of *Anemon* spp., *Geranium* spp. and *Trillium* spp. and *Viola* spp. This type is found in the Forest 2/14 Danda, 2/15 Dwaridanda and R/2 Praligirchi of Arsu Range.

C1 (b) West Himalayan sub-Alpine, Birch Fir Forests:

As per description of 14 C-1 (a) top canopy consists of *Abies spectabilis*, *Picea smithiana* while middle canopy consists of *Betula utilis*, *Quercus semicarpifolia* and *Rhododendron campanulatum*. The undergrowth consists of *Cotoneaster acuminata*, *Strobilanthes* spp., *Rosa* spp., *Viburnum* spp., *Deutzia corymbosa*, *Berberis* spp., *Juniperus wallichiana* and *Smilax* spp., *Sercea* spp., *Lonicera* spp and *Rubus niveus*.

Sub Alpine Pasture:

This type is found near the tree limit which extends to the alpine zone. This type consists of out-line patches of sub alpine Forests and shrub, chiefly in the form of colony of *Betula* spp. and *Rhododendron* spp. Extensive patches of dwarf, *Rhododendron* and dwarf *Juniperus* are also met with. The climate is too cold for the growth of tree and precipitation is usually in the form of snow which last more than six month, thus limiting the growing season. Top and middle storey consists of *Betula utilis* and *Rhododendron* spp. The undergrowth consists of *Salix* spp., *Lonicera* spp., *Berberis* spp. and *Rosa* spp. The ground flora consists of *Aconitum* spp. This type occurs in the Forests of 2/14 Danda, 2/15 Dwaridanda of Arsu Range.

Group 15: Moist Alpine Scrub:

C1 Birch-Rhododendron Scrub Forests:

This type is found all over the tract of this Division in the Alpine Zone. This type forms low evergreen Forests entirely of *Rhododendron* spp but with some Birch and other deciduous trees on Northern and moist aspects.

The growth is so dense as to be difficult to penetrate particularly in uphill directions as owing to snow pressure. The stems are all covered up from more or less horizontal or downward bent base. The trunks are short and rarely over 60 cm in girth. The mosses and ferns cover the ground.

The top canopy consists of *Bitula utilis*, *Rhododendron compenulatum*, and *Quercus semicarpifolia*. The middle canopy consists of *Viburnum* spp., *Rhododendron* spp., *Lepidotum* spp. and *Cotoneaster* spp., while the undergrowth consists of *Berberis* spp., *Lonicera parviflora*, *Gantheria arichophylla* and *Polyginum vacinifolium*. The ground flora consists of *Primula denticulata*, *Primula stuarti* and *Macrotonis benthamii* etc.

IS(c) Deciduous Alpine Scrub:

This type of Forest is found in Jalori Forests of Chawai, and 2/18 Dawaridanda of Arsu Range, a low deciduous scrub formation usually about 1 meter in height forming the cover.

E1 Dwarf Rhododendron Scrub:

The crop in such type consists of stunted growth of *Rhododendron* spp. and occurs on elevation from 3200-3800 meters. Other Broad leaved species are conspicuously absent. The ground flora is same as under type 15-CI. Such Forests are found in 2/34 chul in Chawai and 2/18 of Arsu Range.

C3 Alpine Pasture:

This type stretches above the tree growth limit to the line of perpetual snow. In this type a wide Range of medicinal herbs of valuable commercial value like *Mecopopris* spp., *Potentilla* spp., *Caltha* spp., *Aconite* spp., *Sancecio* spp., *Primula* spp., *Borage* spp., *Myosotis* spp., *Gentiana karoo* etc. are met with.

The extensive alpine lands are used for sheep and goat grazing by the migratory as well as local people. A variety of Wild Life is also found at these elevations including Musk deer. In June and July *Wild Straw berries* (*Fragaria vesca*) of excellent flavour are plentiful in the Alpine pastures. *Gentians karoo*, *Aconite* (*Aconitium heterophyllum*) and *Podophyllum* etc. are extensively exported as medicinal and dhup for incense.

The meadows are composed mostly of Mesophytic herbs. The conspicuous herbs are *Primula*, *Anemone*, *Iris*, and *Gentiana* with many *Ranunculaceae* and *compositae* family plants.

The Hon'ble Supreme Court of India in CWP No. 202/95 dated 28.03.2008 in T.N. Godavarman Thirumulpad versus Union of India & Others held that 16 major Forest types have been classified by Champion and Seth further grouped into 6 ecological classes depending upon their ecological functions as follows:-

Sr.No.	Eco-Class	Description
1	Eco-Class I	Consisting of Tropical Wet Evergreen Forests, Tropical Semi Evergreen Forests and Tropical Moist Deciduous Forests.
2	Eco-Class II	Consisting of Littoral and Swamp Forests.
3	Eco-Class III	Consisting of Tropical Thorn Forests and Tropical Dry Evergreen Forests.
4	Eco-Class IV	Consisting of Tropical Thorn Forests and Tropical Dry Evergreen Forests.
5	Eco-Class V	Consisting of Sub-Tropical Broad Leaved Hill Forests, Sub-Tropical Pine Forests and Sub Tropical Dry Evergreen Forests.
6	Eco-Class VI	Consisting of Montane West Temperate Forests, Himalayan Moist Temperate Forests, and Himalayan Dry Temperate Forests, Sub Alpline Forests, Moist Alpine Scrub and Dry Alpine Scrub.

Keeping in view of the above classification of Forests the only Eco-class V & VI falls in and outside the protected area for the application of Forest (Conservation) Act, 1980.

2. A.3 Status of Natural Regeneration:

Due to ban imposed on green felling, no green fellings were carried out during the period of the Working Plan under revision. Therefore no regeneration survey was conducted in the Working Plan under revision.

2A.4 Injuries to which the Crop is Liable:

The Forests of this division are exposed to various injuries caused by climatic, fire, man, Animal and birds, insects, fungi etc. and are described as under:-

- i) **Climatic injuries:** It is caused by the extent of snow, by wind action, hail storms, lightening, frost and drought.
 - (a) **Snow** Due to heavy snow fall, breaking and uprooting of trees are quite common. The damage is more in conjoined pole and sapling crops.
 - (b) **Rain** Persistent rain causes land slips/slide which destroys large number of trees.
 - (c) **Wind action and Hail Storms** Considerable wind damage in the form of uprooting and breaking of trees occur during October, November and March. Hail storms are common during April.
 - (d) **Lightning** Occasionally, individual trees are damaged due to lightning but the damage is insignificant. Only few trees are damaged annually by lightning.
 - (e) **Frost** Young seedling suffers in case of exceptional winter frost.
 - (f) **Drought** There is a drought period of two to three months before and after rains which causes mortality to a large number of seedlings in the afforested areas. Fire damage is maximum during periods of prolonged drought.
- ii) **Biotic Injuries:** This factor is largely responsible for injuries to trees and Forest crops. The various biotic factors are as follows :-

Fires: The greatest damage to Forests is due to fires. Sometimes, the fires are severe and cause severe damage in the tract. In case of severe fire it is not possible to restore the

original condition and new crop raised in the area is never as good as the one destroyed. Fires are caused accidentally as well as through incendiarism. Accidental fires due to lightening or carelessness and are not very common. The Forest fires may be accidental or deliberate careless stubble burning in the fields, throwing away of burning match sticks, careless handling of torch wood, are some of the main causes of the accidental fires. The fire left unattended by the sawyers and by the poachers in the Forest is also one of the serious causes of the accidental fires. The villagers sometime set the Forest on fire deliberately. The Forest fires caused by natural causes such as lightening or rolling of stones are rare.

(a) Most of the fires are due to local incendiarism with the belief that the burning of Forest areas improves the fodder resources by getting fresh grass and tender herbage.

(b) **Human:** The injuries to the Forest is also caused by human being as given below:-

Lopping: Local people mostly indulge in lopping of trees for their bonafide use like fuel and fodder which makes the trees sufferer greatly on account of heavy and irregular lopping especially near the habitations and along the Satluj river where large flocks of sheet and goats are grazed during winter. Oaks are lopped for fodder in addition to Maple, Celtis, Robinia, Spruce and Kail lopped for different purposes.

(i) **Cutting of Torchwood & Debarking of Walnut:** The villagers do considerable damage to Deodar, Kail and Chil trees, by cutting deeply and scooping out the resinous torchwood from the basal portion of the trees. These damages are most severe near the villages. The roots and stems of walnut trees are also debarked by the villagers for cleaning the teeth which is also known as Dandasa in local dialect. Due to these cut injuries; the trees are exposed to insects and fungal attack.

(ii) **Felling:** Though incidence of illicit felling is not very high in this division but a few trees are sometimes cut illicitly by the villagers for their bonafide domestic use.

(iii) **Encroachments:** The encroachment of Forest land for cultivation and other purposes continue to be the most pernicious practice endangering the Forest resources throughout the country. The decisions of the State Government to regularize the encroachments from time to time have induced the people for further encroachments in the Forest land and the problem remained as elusive as ever for want of effective and concerted action against this evil practice.

(iv) **Removal of Pine Needles:** Local people collect fallen pine needles for their litter purposes. The excessive and continuous removal of the needles especially near the habitations makes the soil bare and thus exposes it to soil erosion and loss of fertility.

(v) **Grass Cutting:** Though, this practice is beneficial but the damage is only caused by inadvertent cutting of seedling during grass cutting operations.

(vi) **Quarrying:** There is little number of regular quarrying sites in this tract. But due to this action a landslide are common and causes damage to the tree growth. Considerable damage has been caused by quarrying operations.

(c) **Wild Animals Birds & Wild Animals** also damage Forest crop, but such damage is not so menacing. Monkeys destroy the seed and uproot the young seedling. Flying squirrel destroys lot of conifer seed annually. The Himalayan nutcrackers eat the seed of pine cones. Pheasants also eat up the seeds from the polythene bags in the nursery of Deodar and Chil. Black bear also do considerable damage to the Deodar, Blue pine saplings and poles by debarking and girdling. Bear also consume large quantities of Oak acorn, seeds of Horse chestnut and walnut etc. Porcupines and Monkeys dig out young

seedlings in the nurseries as well as in the plantations areas and eat roots. Flying squirrels consume unripe cones of Deodar, Kail and Chil and as such sizeable quantity of seed is destroyed. The birds and Lizards nip the young seedlings and eat fruit. Wood packers bore holes in the stems of standing trees.

(d) Damage by Insects: Considerable damage also occurs to the Forest crop in this tract particularly in Chowai Range by a leaf defoliator identified as *Abraxas fuscescens*. The root borer damages the nursery seedlings. Cock Chafer graves and wire worms damage young Deodar seedlings while the larvae of the *Euzophera cedrella* attack Deodar sapling considerable. Insect damage is sporadic and does not assume the form of an epidemic. *Deodar defoliator*, *Ectropia deodara* does great damage to *Deodar*, *Euzophera cedrella* attacks Deodar cones and destroys the seed. Malolontta (*Cock chafer*) and Elater (wise worm) kill young Deodar seedlings in the nurseries and plantations devouring the roots. The insect *Chermesabietis piseoe* causes galls on Spruce. There is another insect namely *Photophagus chalcit* which causes galls on Deodar needles and Spruce.

(e) Fungi :- The following are the most fungi which attack on the plants in this tract:

i) *Trametes pinii*: This causes significant damage to kail in this division. The fungus causes decay mainly in the heart wood of Kail trees. The heart wood is stained light pink or brown or reddish, due to which the disease is known as ‘red-rot’. *Trametes pinii* in fact, in Kail mainly attacks through trunk wounds caused during lopping which should be prohibited or controlled to minimize infection. In case of severe attack, the loss of timber is enormous. The lopping carried out during monsoon is more damaging because the infection spreads during these months therefore, the lopping that too silviculturally should be done during winter or spring seasons only.

(ii) *Fomes annosus*: It attacks Deodar poles through the roots in badly drained soil and results in their death. The Deodar root fungus has very occasionally killed individual saplings and poles in pure Deodar crops. The damage due to this fungus is not appreciable and only sporadic casualties have been noticed in this division. As the fungus is soil borne, digging of trench around infected groups of poles, uprooting and burning the infected material will be helpful in controlling this fungus. *Peridermium cedria* needle fungus causes witches broom and kill trees by attacking leading shoots. *Fugarium* species causes “dumping off” of the seedling on the wet sites. Other fungi are not of much consequence except for termite pinii.

iii) *Peridermium companulatum* & *P. brebis*: These fungi attack the needles of Chil and Kail respectively and kill them. Slight attack of these has been sporadically noticed in some Chil and Kail Forests.

iv) *Fusarium* species: It attacks the roots of young Deodar seedlings which consequently damp off. Bad drainage & poor aeration are the main causes of this disease. Deodar should, therefore, always be grown in well drained soils. Besides this, damping off in conifer seedlings is also caused by *Pythium*, *Rhizoctonia* & *Phytophthora* spp.

(f) Climbers: There are mainly three climbers namely *Vitis semecodata*, *Rosa mosqueta* and *Hydra helix* which are most common and are commonly found in Deodar and Kail Forests. These climbers if not removed have been seen to be damaging young plants by suppression.

CHAPTER-II B: FOREST FAUNA

2B.1 Introduction:

Due to diverse flora, climate & altitude the area possesses unique variety of Himalayan wildlife species. In the recent past a partial status survey of the wild life was conducted which confirms the above facts. Some of these species are endangered and are included in the Red Data Book (IUCW 1978). The main wild life species found in the area are Musk deer, Barking Deer, Serrow, Himalayan Black Bear, common Leopard amongst Animals. Whereas the main pheasant species are western Tragopan, Monal, Cheer, Kaleej, Koklas and Snow cock.

During Post Independence, there has been a growing concern about the decline of wildlife populations and the necessity of conservation and preservation of India's wildlife. This led to the enactment of the Wild Life (Protection) Act, 1972.

By an amendment in 2003, the objective of the WLPA, reads as follows, “*An Act to provide for the protection of wild Animals, birds, plants and for matters connected therewith or ancillary and incidental thereto with a view to ensuring the ecological and environmental security of the country.*”

Thus wildlife conservation is acknowledged as integral to ecological and environmental security of our country, rather than being limited to conservation of certain species of plants, Animals and birds or their habitats.

2B.1.1 Mammals:

A variety of fauna is found in the tract due to variation in altitudes, topography, climate and vegetation. The important fauna is Leopard or Panther (*Panthera pardus*), Himalayan Black Bear (*Selenarctos thibetanus*), Jungle Cat (*Felis chaus*), Leopard Cat (*Felis bengalensis*), Himalayan Pine Marten (*Martes flavigula*), Jackal (*Canis aureus*) Red Fox (*Vulpes vulpes*), Ghoral (*Nemorhedus griseus*), Blue Sheep (*Pseudois nayaur*), Ibex (*Capra ibex*), Musk Deer (*Moschus moschiferus*), Kakker (*Muntiacus muntjak*), Indian Wild Bear (*Suscorfa cristatus*), Monkey (*Macaca mulatta*), Langurs (*Presbytis entellus*), The Giant Indian Flying Squirrel (*Etauristapeta urista*), Indian Hare (*Lepus nigricollis*).

The brief descriptions of common Mammals are as under:-

- **Leopard or Bagh (*Panthera pardus*):**- Belongs to cat family and is commonly met in the Forests near habitations. It often infests villages off sheep, goats, dogs and even poultry, but never attacks human beings without provocations.
- **Flying Squirrel (*Etauristapeta urista*):**-Flying squirrel (*Etauristapeta urista*) is another Animal found commonly in this tract up to 10,000 feet elevation. It does considerable damage to coniferous trees seeds. Its fur is valued much for hand gloves etc.
- **Brown Bhalu (*Ursus arctos*)** :- (*Ursus arctos*) the black bear commonly inhabits oak Forests from 6,000 to 10,000 feet elevation. It often comes down to the village-fields during harvest seasons and causes considerable damage to the standing crops. It is a savage Animal, and sometimes attacks human beings even without provocation. It is prized for its skin, fat and gall-bladder.
- **Kakar (*Muntiacus muntjak*):**- It is fairly disturbed between 3,000 to 7000 feet elevation. It is small red deer found in scrub Forests and especially fond of amla trees and karaunda like plants.

Goral (*Nemorhaedus griseus*) :- This is another Himalayan wild goat distributed all over the area from an elevation of 3,000 to 8,000 feet, and is one of the commonest and most fearless of the Himalayan Animals. It hunts rocky grassy hills and is generally found in groups of 4 to 8. It is available fairly in abundance in steep to precipitous grounds amongst chil Forest round about Taklech.

- **Musk deer (*Moschus moschiferus*)**: This species exists in subalpine Rhododendron zone in Kurpan valley and Anni valley at above 3000 mtrs elevation and is solitary and secretive in its habits.
- **Barking Deer (*Muntiacus muntjak*)**: This species is found in the altitude range of 1600-2900 Mts. all over the area. It is also nocturnal in its habits.
- **Serow (*Capricornis sumatraensis*)**: This goat antelope is found on craggy, but only moderately steep in Birch Rhododendron Forests, sub-alpine scrub and adjacent small patches of meadows.
- **Himalayan Thar (*Hemitragus jemlahicus*)**: -This species is reported to exist in Bashleo pass and other rocky and steep areas up to 4400 Mts. elevation.
- **Blue sheep (*Pseudois nayaur*)**: In structure and habits the blue sheep or Bharal holds a place intermediate between sheep and goat. They are found at such between the tree and snowline that is up to 4880 mtrs in summer and rarely below 3660 mtrs in winter. In summer they live in flocks which can be up to 200 in number. They are reported to exist in the higher reaches of Kurpan valley.
- **Others**: - Amongst other common wild Animals, Jackals, Langoors and Monkeys are found practically all over the division up to 9000 feet elevation.

Recently, the monkey census has been carried out during 2010 in this division which is tabulated in table No.2B.1

Table No. -2B.1

Sr.No.	Name of Range	Total Troops	Papulation of Monkeys		Total
			Adult	Infant	
1	Arsu	64	1111	466	1577
2	Chowai	45	1151	523	1674
3	Nither	45	1181	538	1719
	Total	154	3443	1527	4970

(Source: Record of DFO Anni)

Emphasis on recruitment i.e. young ones is to be given during the one hour count every six months. The detailed guidelines has been issued for monkey incidence estimation during 2012 and further during the survey for the population estimation of common monkeys (*Rhesus macaques*), separate guidelines were issued vide Pr.CCF (CWLW) vide letter No. 886-937 dated 22.05.2015 and during 2019, the Monkey Census was also undertaken in Anni Forest Division. Accordingly, the census has also been carried out during 2015 & 2019 in Anni Forest Division are tabulated in table No. 2B.2 & 2B.3 respectively: -

Monkey census during the year 2015

Tehsil	Page Number	Date	Time	Troop number	Habitat	Male	Female	infants	Young	Unknown	Way point ID	Latitude	Longitude	Landmark
4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Nirmand		30.06.2015	10:00AM	1	F	2	0	0	1	0		N31°24'17.4"	E-077°84'21.1"	UPF Sisoo
		30.06.2015	11:15AM	2	C	2	2	2	4	3		N31°24'05.2"	E-077°34'30.5"	Near Dropa Village
		30.06.2016	12:30PM	3	R & C	6	3	4	3	2		N31°25'34.4"	E-077°33'41.9"	Oddidhar
Nirmand		01.07.2015	10:00AM	1	F	1	2	1	3	4		N31°24'17.1"	E-077°34'22.1"	UPF Sisoo
		01.07.2016	11:30AM	2	C	4	2	2	4	1		N31°25'23.2"	E-077°33'30.1"	ShrainKod
Nirmand		02.07.2015	10:00AM	1	C	1	0	0	4	3		N-31°24'02.8"	E-077°34'38.4"	Dropa Village
		02.07.2016	11:30AM	2	R	1	2	2	3	3		N-31°25'36.5"	E-077°33'46.1"	Oddidhar
		02.07.2017	12:30AM	3	C	4	3	3	4	2		N-31°18'18.6"	E-077°33'22.8"	ShrainKod
Nirmand		30.06.2015	10:00AM	1	T	8	6	6	7	8		N-31°27'38.1"	E-077°35'39.6"	Kandi Temple
		30.06.2016	11:15AM	2	F	6	12	10	8	4		N-31°27'06.7"	E-077°34'38.3"	UPF NishAnni
		30.06.2017	12:30PM	3	C&F	2	4	4	6	5				UPF Jahalu
		30.06.2018	2:PN	4	C	1	2	2	3	1				Kedas Village
Nirmand		01.07.2015	10:00AM	1	F	2	4	4	5	3		N-31°27'03.0"	E-077°35'07.3"	UPF NishAnni
		01.07.2016	11:30AM	2	F	3	2	2	2	3		N-31°27'07.3"	E-077°34'52.5"	UPF Nishani
		01.07.2017	10:00AM	3	C	1	1	0	0	0				Kedas Village
Nirmand		02.07.2015	11:30AM	1	F	3	4	4	5	4		N-31°27'05.8"	E-077°34'54.5"	UPF NishAnni
		02.07.2015	12:30AM	2	F	2	1	1	5	3				Jahalu
Nirmand		30.06.2015	10:00AM	1	U	6	9	5	4	0		N-31°26'43.0"	E-077°37'35.0"	Ropru Brow
		30.06.2015	11:30AM	2	C	5	16	8	9	0		N-31°25'36.2"	E-077°37'0.7"	Rallu Village
		30.06.2015	12:25PM	3	F	7	17	8	10	0		N-31°27'02.7"	E-077°36'20.0"	UPF Brow
Nirmand		01.07.2015	10:00AM	1	U	6	8	5	4	0		N-31°26'43.0"	E-077°37'35.0"	Ropru Brow
		01.07.2015	11:30AM	2	C	9	10	8	9	0		N-31°25'36.2"	E-077°37'0.7"	Rallu Village
		01.07.2015	12:25PM	3	F	7	16	8	10	0		N-31°27'02.7"	E-077°36'20.0"	UPF Brow
Nirmand		02.07.2015	10:00AM	1	U	7	9	5	4	0				
		02.07.2015	11:30AM	2	C	9	13	8	9	0				
		02.07.2015	12:25PM	3	F	7	15	8	10	0				
Nirmand		30.06.2015	10:00AM	1	R	7	9	6	4	3		N-31°24'10.9"	E-077°35'25.9"	UPF Bail
		30.06.2015	11:30AM	2	F	2	3	3	2	2		N-31°24'08.8"	E-077°35'24.6"	UPF Bail
		30.06.2015	12:25PM	3	F	15	15	7	4	4		N-31°24'11.0"	E-077°35'25.8"	UPF Bail
		30.06.2015	2:00PM	4	T	1	0	0	0	0		N-31°23'57.0"	E-077°37'44.0"	UPF Bail
		30.06.2015	3:00PM	5	F	2	3	2	1	8		N-31°24'23.5"	E-077°35'24.6"	UPF Bail
		01.07.2015	10:00AM	1		6	4	4	2	0		N-31°24'08.8"	E-077°35'24.6"	Deodank
		01.07.2015	11:30AM	2		10	9	6	4	4		N-31°24'10.9"	E-077°35'25.8"	Deodank
		01.07.2015	12:25PM	3		5	3	3	0	0		N-31°24'11.0"	E-077°35'25.9"	Deodank
		01.07.2015	2:00PM	4		4	6	4	4	1		N-31°24'23.5"	E-077°35'24.6"	Deodank
		01.07.2015	3:00PM	5		11	6	4	5	2		N-31°24'23.6"	E-077°35'24.6"	Deodank

		02.07.20 15	10:00AM	1		15	12	7	6	5		N- 31°24'10.9"	E- 077°35'25.9"	Averi
		02.07.20 15	11:30AM	2		2	2	1	0	0		N- 31°24'08.8"	E- 077°35'24.6"	Shataldhar
		02.07.20 15	12:25PM	3		7	5	4	2	3		N- 31°24'11.0"	E- 077°35'25.8"	Shataldhar
		02.07.20 15	2:00PM	4		4	4	3	3	1		N- 31°23'57.0"	E- 077°37'44.8"	Shataldhar
Nirmand		30.06.20 15	10:00AM	1	F	6	12	9	11	4		N- 31°30'87.1"	E- 077°34'045"	Khanidhar
		01.07.20 15	10:00AM	1	F	4	9	8	10	3		N- 31°30'681"	E- 077°33'52.3"	Shloorinala
		02.07.20 15	10:00AM	1	C	5	7	6	8	7		N- 31°30'314"	E- 077°33'46.9"	Kbabra
Nirmand		30.06.20 15	10:00AM	1	C	4	9	7	8	3		N- 31°28'24.6"	E- 077°33'75.5"	Shaunbeel
		01.07.20 15	10:00AM	1	F	5	8	6	7	2		N- 31°28'54.7"	E- 077°33'87.4"	Chorakot
		02.07.20 15	10:00AM	1	F	3	6	5	4	7		N- 31°28'36.7"	E- 077°33'98.0"	Thunubeel
Nirmand		30.06.20 15	10:00AM	1	C	6	11	7	6	4		N- 31°28'33.9"	E- 077°35'87.6"	Odadherta
Nirmand		01.07.20 15	10:00AM	1	O	4	9	7	6	2		N- 31°28'33.9"	E- 077°35'87.6"	Khajorard
		01.07.20 15	11:00AM	2	O	8	13	9	6	4		N- 31°28'98.0"	E- 077°35'82.3"	Mahudhank
		01.07.20 16	12:30AM	3	O	5	11	6	7	3		N- 31°28'41.8"	E- 077°36'46.0"	Chhoathai
Nirmand		02.07.20 15	10:00AM	1	O	6	9	7	8	5		N- 31°28'33.9"	E- 077°35'87.6"	Odadharta
		02.07.20 16	11:30AM	2	O	6	11	8	6	3		N- 31°28'98.0"	E- 077°35'82.3"	Mahudhank
		02.07.20 16	12:30PM	3	O	4	7	6	7	3		N- 31°28'41.8"	E- 077°36'46.0"	Chhoathai
Nirmand		30.06.20 15	10:00AM	1	F	8	10	4	6	12		N- 31°30'66.1"	E- 077°34'82.1"	Jalari
		01.07.20 15	10:00AM	1	R	1	2	1	2	2		N- 31°30'67.5"	E- 077°34'34.3"	Deem Nrsy
		02.07.20 15	10:00AM	1	F	4	6	5	3	2		N- 31°30'97.3	E- 077°34'36.8"	Near Deem School
Nirmand		30.06.20 15	10:00AM	1	C	3	6	5	4	2		N- 31°34'05.7"	E-077°34'5.2"	Near Jaon
		01.07.20 15	10:00AM	1	F	4	6	6	3	2		N- 31°33'47.5"	E-077°25.3"	JaonKhad
		02.07.20 15	10:00AM	1	C	4	6	5	4	3				Jawa Village
Nirmand		30.06.20 15	10:00: AM	1	O	0	0	0	0	0				
		01.07.20 15	10:00AM	1	F	7	9	6	4	5		N- 31°33'38.2"	E- 077°32'31.6"	Near IshwaNrsy
		02.07.20 15	10:00AM	1	C	4	5	4	3	3		N- 31°33'39.0"	E- 077°33'06.9"	Trina Village
Nirmand		30.06.20 15	10:00AM	1	F	3	2	2	2	9		N- 31°32'10.3"	E- 077°31'51.5"	DhlairNrsy
		30.06.20 16	11:30AM	2	F	4	3	3	2	14		N- 31°32.24.4"	E- 077°32.23.0"	Banshadhar
		01.07.20 15	10:00AM	1	F	3	3	3	4	8		N- 31°33'27.2"	E- 077°33'9.24"	Thachadhar
		01.07.20 15	11:30AM	2	F	4	5	5	3	11		N- 31°32.27.2"	E- 077°32'72.6"	Shami Village
		02.07.20 15	10:00AM	1	F	3	2	2	4	9		N- 31°33'23.5"	E-077°31'0.1"	BagaShadanal
		02.07.20 15	10:00AM	2	C	2	3	3	4	12		N- 31°32'8.0"	E- 077°32'9.17"	DharAnni Village
Nirmand		30.06.20 15	10:00AM	1	F & C	2	5	2	0	4		N- 31°34'30.2"	E-077°35'0.4"	Oddidhar
		01.07.20 15	10:00AM	1	F	7	19	6	0	8		N- 31°33'33.1"	E- 077°35'30.5"	2/12 Balacha
		02.07.20 15	10:00AM	1	F	4	10	8	0	6		N- 31°33.33.1"	E- 077°35'30.5"	2/12 Balacha
Nirmand		30.06.20 15	10:00AM	1	F	3	7	4	4	2		N- 31°30'18.2"	E- 077°38'52.1"	Tikrikod
		30.06.20 15	11:30AM	2	C	5	9	3	8	3		N- 31°27'42.2"	E- 077°39'39.4"	NearBakhanNrs y

		30.06.20 15	12:30PM	3	0	0	0	0	0	0		0	0	0
Nirmand		01.07.20 15	10:00AM	1	F	5	10	4	6	2		N- 31°28'45.3"	E- 077°46'36.2"	TatapAnni
		01.07.20 16	11:30AM	2	C	15	20	10	12	0		N- 31°27'42.2"	E- 077°39'39.4"	Near BakhanNrsy
		01.07.20 17	12:30PM	0	0	0	0	0	0	0		N- 31°28'45.3"	E- 077°46'36.2"	TatapAnni
Nirmand		02.07.20 15	10:00AM	1	F	4	7	3	5	3		N- 31°30'15.2"	E-077°39'3.4"	Niharanal
		02.07.20 16	11:30AM	2	C	6	8	3	4	2		N- 31°28'15.3"	E- 077°39'17.9"	Darkadharla
		02.07.20 17	12:30PM	3	C	2	0	0	0	0		N- 31°28'31.1"	E- 077°46'36.2"	Chilage
		02.07.20 18	2:00PM	4	C	3	5	1	9	0		N- 31°27'45.1"	E- 077°39'45.2"	Zero pointBakhan
		02.07.20 19	2:00PM	5	F	5	8	6	7	0		N- 31°27'42.2"	E- 077°39'39.4"	Near BakhanNrsy
Nirmand		30.06.20 15	10:00AM	1	F & C	3	6	2	3	4		N- 31°31'58.1"	E- 077°41'54.9"	Noikindar Village
		01.07.20 15	10:00AM	1	F & C	2	5	4	3	6		N- 31°55'56.3"	E- 077°40'53.5"	Badizan Village
		02.07.20 15	10:00AM	1	F & C	2	5	6	4	5		N- 31°32'31.9"	E- 077°41'03.6"	Chayogi
Nirmand		30.06.20 15	10:00AM	1	C	15	25	5	7	2				Kinlda
		30.06.20 15	11:30AM	2	T	16	24	3	5	3		N- 31°29'13.2"	E- 077°40'54.1"	Banthana
		30.06.20 15	12:30AM	3	F	9	21	1	3	5		N- 31°30'60.3"	E- 077°40'35.2"	Shahdogri
Nirmand		01.07.20 15	10:00AM	1	F	5	17	2	4	3		N- 31°29'13.2"	E- 077°40'55.1"	UPF Kushwa
		01.07.20 15	11:30AM	2	F	10	23	1	3	2				Nohnu
		01.07.20 15	1:00PM	3	O	12	19	2	3	4		N- 31°29'13.2"	E- 077°40'54.1"	Banthana
Nirmand		02.07.20 15	10:00AM	1	C	12	23	5	6	3		N- 31°29'33.3"	E- 077°41'02.7"	Badari
		02.07.20 15	11:30AM	2	T	8	15	0	4	5		N- 31°29'13.2"	E- 077°40'55.1"	Banthana
		02.07.20 15	1:00PM	3	C	7	20	0	2	3				UPF Kushwa
Nirmand		30.06.20 15	10:00AM	1	G	6	5	5	3	0				Jagat Khana
		30.06.20 15	11:30AM	2	V	2	1	1	3	2				Thachwa
		30.06.20 15	1:00PM	3	O	6	9	9	7	3				Chati
		30.06.20 15	2:00PM	4	C	6	10	10	4	5				Sharshaya
		30.06.20 15	3:00PM	5	V & F	3	2	2	1	4				Barat Chottu
Nirmand		01.07.20 15	10:00AM	1	R	1	3	3	2	0				Jagat Khana
		01.07.20 15	11:30AM	2	V	4	1	1	3	2				Thachwa
		01.07.20 15	1:00PM	3	O	6	8	8	7	0				Chatti
		01.07.20 15	2:00PM	4	C	4	7	7	3	3				Sharshaya
		01.07.20 15	3:00PM	5	C	7	3	3	1	0				Barat Chottu
Nirmand		02.07.20 15	10:00AM	1	C	4	9	7	7	3				Sharshaya
		02.07.20 15	11:30AM	2	F	9	12	10	8	0				Barat Chottu
		02.07.20 15	1:00PM	3	G	4	3	3	6	2				Jagat Khana
		02.07.20 15	2:00PM	4	0	0	0	0	0	0				Thachwa
		02.07.20 15	3:00PM	5	R	1	2	2	3	0				Chati
Anni		30.06.20 15	10:00AM	1	F	4	18	12	6	5				UPF Haripur

		01.07.20 15	11:30AM	2	F	6	9	7	4	0					UPF Olwa
		02.07.20 15	2:00PM	3	F	2	9	5	3	4					UPF Roha
Anni		30.06.20 15	10:00AM	1	F	5	12	2	4	0					1/23 Olinal
		01.07.20 15	10:00AM	0	F	0	0	0	0	0					Namong
		02.07.20 15	10:00AM	1	F	2	8	2	0	0					1/22 Barubarehad
Anni		30.06.20 15	10:00AM	1	F	5	7	9	9	0					UPF Kalow
		01.07.20 15	10:00AM	1	F	2	3	4	6	0					1/33 Taraijakhar
		02.07.20 15	10:00AM	1	F	3	4	2	3	0					1/13 Taraijakhar
Anni		30.06.20 15	10:00AM	1	F	5	7	3	5	4					UPF Kutwa
		01.07.20 15	10:00AM	1	F	5	4	5	6	6					1/12 Darad
		02.07.20 15	10:00AM	1	F	7	8	5	4	7					2/24 Bung
Anni		30.06.20 15	10:00AM	1	F	31	31	8	17	6					UPF Naharopa
		01.07.20 15	10:00AM	1	F	0	0	0	0	0					UPF Bakhnao
		02.07.20 15	10:00AM	1	F	5	6	3	1	0					2/22 Jadaribamour
Anni		30.06.20 15	10:00AM	1	F	4	5	5	6	0					UPF Binan
		01.07.20 15	10:00AM	1	F	5	5	5	7	0					1/36 PleniChaloun
		02.07.20 15	10:00AM	1	F	6	7	7	5	0					1/36 PleniChaloun
Anni		30.06.20 15	10:00AM	1	F	18	22	6	11	0					UPF Karana
		01.07.20 15	10:00AM	1	F	0	0	0	0	0					UPF Junji
		02.07.20 15	10:00AM	1	F	10	12	4	7	5					UPF Panjudarh
Anni		30.06.20 15	10:00AM	1	F	18	16	10	7	3					1/35 Paneo
		01.07.20 15	10:00AM	1	F	0	0	0	0	0					UPF Jehara
		02.07.20 15	10:00AM	1	F	0	0	0	0	0					UPF Bala
Anni		30.06.20 15	10:00AM	1	F	6	19	5	11	0					UPF Frooti
		01.07.20 15	10:00AM	1	F	0	0	0	0	0					1/30 Chutad
		02.07.20 15	10:00AM	1	F	0	0	0	0	0					1/30 Chutad
Anni		30.06.20 15	10:00AM	1	F	11	9	6	4	0					UPF Chajoot
		01.07.20 15	10:00AM	1	F	0	0	0	0	0					R/7 Takrasi
		02.07.20 15	10:00AM	1	F	14	11	2	8	0					UPF Koltha
Anni		30.06.20 15	10:00AM	1	F	11	8	3	4	3					UPF Baradi
		01.07.20 15	10:00AM	1	F	0	0	0	0	0					UPF Kuiner
		02.07.20 15	10:00AM	1	F	10	7	4	3	0					UPF Uthkhaner
Anni		30.06.20 15	10:00AM	1	F	20	18	9	0	0					UPF Kenshal
		01.07.20 15	10:00AM	1	F	0	0	0	0	0					UPF Karshala
		02.07.20 15	10:00AM	1	F	19	17	8	0	0					UPF Kamand
Anni		30.06.20 15	10:00AM	1	F	10	9	4	4	0					2/30 Sikiran

		01.07.20 15	10:00AM	1	F	0	0	0	0	0				UPF Lohal
		02.07.20 15	10:00AM	1	F	8	9	6	2	0				2/29 Lahatu
Anni		30.06.20 15	10:00AM	1	F	18	20	11	0	0				UPF Kanala
		01.07.20 15	10:00AM	1	F	22	25	13	0	0				UPF Ropa
		02.07.20 15	10:00AM	1	F	15	17	8	0	0				UPF Khanag
Anni		30.06.20 15	10:00AM	1	F	4	7	8	6	0				1/26 Parkotshil
		01.07.20 15	10:00AM	1	F	0	0	0	0	0				1/27 Bindraban
		02.07.20 15	10:00AM	1	F	4	6	2	9	0				UPF Bhlal
Anni		30.06.20 15	10:00AM	1	F	9	12	8	10	0				UPF Tarala
		01.07.20 15	10:00AM	1	F	0	0	0	0	0				UPF Khadvi
		02.07.20 15	10:00AM	1	F	14	16	12	0	0				UPF Jaon
Anni		30.06.20 15	10:00AM	1	F	17	24	7	7	0				UPF Deem
		01.07.20 15	10:00AM	1	F	0	0	0	0	0				2/27 Bohan
		02.07.20 15	10:00AM	1	F	0	0	0	0	0				UPF Thanach
Nither		30.06.20 15	10:00AM	1	F	5	8	4	7	5		N- 31°28'20.0"	E- 077°34.29.0"	Sharthi
		01.07.20 15	10:00AM	2	F	5	7	3	2	5		N- 31°32'24.0"	E-077°35.30"	Moon Nalla
		02.07.20 15	10:00AM	3	F	6	9	5	5	6		N- 31°20'14.0"	E-077°28.23"	Chebri
Nither		30.06.20 15	10:00AM	1	C	4	4	3	6	7		N- 31°21'33"	E- 077°30'44.2"	Moin
		01.07.20 15	10:00AM	2	F	3	4	4	5	5		N- 31°22'52.9"	E- 077°32'23.7"	Anas
Nither		30.06.20 15	10:00AM	1	V	5	8	6	4	7		N- 31°23'52.6"	E- 077°34'29.5"	Koil Bridge
		01.07.20 15	10:00AM	1	V	6	7	3	3	2		N- 31°23'14.8"	E- 077°32'44.8"	Shanah
		02.07.20 15	10:00AM	0	C	0	0	0	0	0		N- 31°24'35.7"	E- 077°32'46.3"	Ramuan
				0	C	0	0	0	0	0		N- 31°24'26.2"	E- 077°31'31.2."	Durah
				1	C	8	11	6	4	0		N- 31°23'57.6"	E- 077°32'25.6"	Kalidhar
Nither		30.06.20 15	10:00AM	1	F	4	10	7	2	3		N- 31°22'31.6"	E- 077°28'36.9."	Durah
		01.07.20 15	10:00AM	1	F	4	7	6	2	3		N- 31°22.'62.1 "	E- 077°29'59.6"	KhobriKhad
Nither		30.06.20 15	10:00AM	1	F	2	2	1	2	1		N- 31°24.'51.9 "	E- 077°31'28.4"	Sarahar
		01.07.20 15	10:00AM	1	F	1	2	2	2	0		N- 31°26.'02"	E- 077°30'44.2"	Sharvi
Nither		30.06.20 15	10:00AM	1	F	3	8	4	5	8		N- 31°27'42.4"	E- 077°36.64.9"	Bashad
		01.07.20 15	10:00AM	0	F	0	0	0	0	0		N- 31°28.'14.4 "	E- 077°30'91.6"	Ishwa
		02.07.20 15	10:00AM	0	F	0	0	0	0	0		N- 31°27.'23.2 "	E- 077°30'75.4"	Margi
Nither		30.06.20 15	10:00AM	1	F	3	10	5	3	7		N- 31°28.'29.3 "	E- 077°30'70.6"	Thardhar
		01.07.20 15	10:00AM	1	F	2	17	10	1	3		N- 31°28.'29.3 "	E- 077°30'70.4"	Bathwa
Nither		30.06.20 15	10:00AM	1	F	20	10	5	6	0		N- 31°30.'17.4 "	E- 077°31'48.5"	Jaral

		01.07.20 15	10:00AM	1	F	14	4	4	3	0		N- 31°26.'62.2 "	E- 077°32'38.8"	Summa
Nither		30.06.20 15	10:00AM	1	F	6	3	5	8	7		N- 31°27'71.1"	E- 077°33'34.0"	Majwa
		01.07.20 15	10:00AM	1	F	4	4	5	1	0		N- 31°7'66.0"	E- 077°33'26.3"	Thantal
Nither		30.06.20 15	10:00AM	1	F	5	6	7	6	4		N- 31°22'27.7"	E- 077°27'30.5"	Jajar
		01.07.20 15	10:00AM	1	F	4	4	7	8	8		N- 31°22'27.7. 8"	E-077°25'48"	Snetha
		02.07.20 15	10:00AM	1	F	3	2	10	10	10		N- 31°22'38.8"	E- 077°27'10.5"	Soidhar
		02.07.20 15	11:50AM	1	F	4	7	2	4	4		N- 31°21'27.5"	E- 077°26'33.7"	Guhan
Nither		30.06.20 15	10:00AM	1	F	3	5	3	2	0		N- 31°23'37.3"	E-077°34'29"	Sheugi
		01.07.20 15	10:00AM	2	F	3	4	6	3	0		N- 31°24'10.8"	E- 077°32'46.3"	Kathar Nala
		02.07.20 15	10:00AM	1	F	4	4	1	1	0		N- 31°23'21.7"	E- 077°29'25.3"	Shilidhar
Anni		30.06.20 15	10:00AM	1	T	11	15	14	10	7		N- 31°20'51.8"	E- 077°27.03.5"	Khegsu
		01.07.20 15	10:00AM	0	F	0	0	0	0	0		N- 31°20'43.9"	E- 077°25.54.9"	Jamedi
		02.07.20 15	10:00AM	0	F	0	0	0	0	0		N- 31°21'09.2"	E- 077°24.37.4"	Kot
		02.07.20 15	11:50AM	1	F	4	9	5	10	10		N- 31°25'59.4"	E- 077°23.20.0"	Nimla
Anni		30.06.20 15	10:00AM	1	F+T	1	4	3	0	0		N- 31°24'32.4"	E- 077°27.37.7"	Jaglandi
		01.07.20 15	10:00AM	0	F	0	0	0	0	0		N- 31°24'24.0 "	E- 077°26.44.0"	Shahidhar
		02.07.20 15	10:00AM	0	F	0	0	0	0	0		N- 31°24'37.2"	E- 077°27.28.44 "	Shekta
		02.07.20 15	11:50AM	1	V	11	5	4	0	0		N- 31°24'29.8"	E- 077°26.40.2"	Kandagai

Table No. 2B.3

Monkey census during the year 2019

Date	Observer	Start Time	End Time	Beat /Village/ Block Name	Transect ID	Total Length	Start Latitude	Start Longitude	End Latitude	End Longitude	Weather	time of Sighting	Total Number	Numbers of								Animal		Latitude of observer	Longitude of Observer	Habitat type/Forest terrain
														AM	AF	SM	SF	SUn.	Inf.	Unknown	Bearing (in Degree)	Distance (in Mtr.)				
04.12.2019	Vikas Sharma	7AM	7:35AM	Luhri	1/Luhri	2.08KM	31.34748	77.5071	31.34565	77.44002	Sunny	7:32AM	3	1	1	0	0	1	0	0	325	15	3134581	7744091	Grass Land/Sparse	
04.12.2019												07:34AM	1	1	0	0	0	0	0	313	18	3134565	7744002	Grass Land/Sparse		
04.12.2019	Sandeep Kumar	8:20AM	8:50AM	Dalash	1/Dalash	2.04KM	31.38459	77.43201	31.37334	77.42683	Sunny	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
04.12.2019	Tejveer	8:25AM	9:10AM	Kandagai	1/Kandagai	2KM	31.24498	77.26675	31.24814	77.27989	Sunny	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
04.12.2019	Pratap Chand	8:28AM	9:42AM	Margi	1/Margi	3.25km	31.27887	77.30518	31.27569	77.30348	Sunny	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
04.12.2019	Satpal	7:20AM	10:12AM	Ghatu	1/Ghatu	3KM	31.25509	77.3298	31.25538	77.32139	Sunny	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
04.12.2019	Kewal Ram	7:20AM	10:07AM	Nore	1/Nore	2.3KM	31.2727	77.33279	31.28228	77.33443	Sunny	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
04.12.2019	Ravinder Kumar	8:38AM	10:07AM	Katmore	1/Katmore	2KM	31.4616	77.50972	31.46478	77.50975	Sunny	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
04.12.2019	Subhash Sharma	7:30AM	8:45AM	Moin	1/Moin	2.6KM	31.35433	77.50409	31.35695	77.5227	Sunny	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
04.12.2019	Jivender Kumar	8:35AM	9:40AM	Koil	1/Koil	2.8M	31.23511	77.56433	31.39385	77.53444	Sunny	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
04.12.2019	Om Parkash	8:20AM	9:35AM	Ghorla	1/Ghorla	2.62KM	31.22385	77.28575	31.22.124	77.29019	Sunny	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
04.12.2019	Kalpna	7:20AM	8:05AM	Ghorla	1/Tandi	2.9KM	31.23158	77.28861	31.2344	77.2931	Sunny	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
04.12.2019	Devender Kumar	9:20AM	10:10AM	Nihter	1/Nihter	2KM	31.22592	77.31095	31.23594	77.3052	Sunny	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
04.12.2019	Shiv Ram	7:50AM	8:35AM	Sarahar	1/Katmore	2KM	31.25389	77.31313	31.24817	77.3189	Cloudy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
04.12.2019	Reena	7:13	8:20AM	Kohil	1/Kohil	2.01KM	31.452	77.43218	31.46098	77.439	Sunny	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

019		AM	M	a	a		12			48	y														
04.12.2 019	Jia Lal	7:40 AM	9:54A M	Kot at Khan ag	1/Kot	2.90KM	31.523 53	77.40392	31.5363	77.403 92	Sunn y	7:42A M	7	1	1	0	0	0	0	4	339	18	31.52438	77.40425	Forest
04.12.2 019	Bihari Lal	7AM	7:40A M	Dee m	1/Dee m	2.2KM	31.526 62	77.46587	31.53478	77.462 32	Sunn y	0	0	0	0	0	0	0	0	0	0	0	0	0	
04.12.2 019	Bhubnes hwar	7:56 AM	8:32A M	Taral a	1/Taral a	2.01KM	31.482 59	77.47018	31.48374	77.477 93	Sunn y	0	0	0	0	0	0	0	0	0	0	0	0	0	
04.12.2 019	Arun Sharma	7:01 AM	7:59A M	Gad	1/Gad	2.1KM	31.432 12	77.436	31.42874	74.446 78	Sunn y	0	0	0	0	0	0	0	0	0	0	0	0	0	
04.12.2 019	Arun Kumar	7:30 AM	8:40A M	Nam hong	1/Nam hong	2KM	31.408 6	77.41793	31.4367	77.424 46	Sunn y	7:38A M	4	4	0	0	0	0	0	0	170	12	31.41016	77.41355	Forest
04.12.2 019												7:46A M	40	8	18	0	0	0	14	0	167	16	31.41025	77.41465	Grass Land/Sparse
04.12.2 019	Vishal	7:05 AM	8:10A M	Hari pur	1/Hari pur	2.4KM	31.406 37	77.38369	31.40751	77.390 47	Sunn y	0	0	0	0	0	0	0	0	0	0	0	0	0	
04.12.2 019	Nitesh	7:28 AM	8:23A M	Cho wai	1/Cho wai	2.19KM	31.281 27	77.27154	31.27256	77.265 23	Sunn y	0	0	0	0	0	0	0	0	0	0	0	0	0	
04.12.2 019	Rajneesh	7:24 AM	8:08A M	Kutw a	1/Kutw a	2KM	31.468 85	77.45826	31.46757	77.466 7	Sunn y	0	0	0	0	0	0	0	0	0	0	0	0	0	
04.12.2 019	Parkash	7AA M	7:50A M	Kara na	1/Kara na	2KM	31.435 68	77.41789	31.44674	77.420 76	Sunn y	0	0	0	0	0	0	0	0	0	0	0	0	0	
04.12.2 019	Shyam Lal	7AM	8:05A M	Patar na	1/Patr na	2KM	31.488 49	77.4106	31.48492	77.391 7	Sunn y	0	0	0	0	0	0	0	0	0	0	0	0	0	
04.12.2 019	Ishwar	7AM	8:05A M	Poeg	1/Poeg	2.2KM	31.496 36	77.41611	31.4427	77.411 66	Sunn y	0	0	0	0	0	0	0	0	0	0	0	0	0	
04.12.2 019	Vinod Kumar	7AM	7:39A M	Bai	1/Bai	2KM	31.448 77	77.38042	31.45774	77.382 5	Sunn y	0	0	0	0	0	0	0	0	0	0	0	0	0	
04.12.2 019	Jai Singh	7AM	8:15A M	kars hala	1/Kars hala	2.7KM	31.489 74	77.32436	31.49767	77.317 32	Sunn y	0	0	0	0	0	0	0	0	0	0	0	0	0	
04.12.2 019	Banti Kumar	6:59 AM	7:55A M	Lohal	1/Lohal	2.3KM	31.522 14	77.38949	31.51846	77.390 64	Sunn y	0	0	0	0	0	0	0	0	0	0	0	0	0	
04.12.2 019	Nihal Chand	7:11 AM	8:02A	Thar vi	1/Thar vi	2.1KM	31.491 69	77.47042	31.50008	77.356 1	Sunn y	0	0	0	0	0	0	0	0	0	0	0	0	0	
04.12.2 019	Ameen	7:57 AM	8:38A M	Kuin er	1/Kuin er	2.164K M	31.476 32	77.3572	31.48556	77.359 09	Sunn y	0		0	0	0	0	0	0	0	0	0	0	0	
04.12.2 019	Mukesh Kumar	7:01 AM	8:10A M	Thar vi	1/Thar vi	2.2KM	31.308 23	77.34859	31.31567	77.354 31	Sunn y	0	0	0	0	0	0	0	0	0	0	0	0	0	
04.12.2 019	Jitender Kumar	7:23 AM	8:07A M	Arsu	1/Arsu	1.668K M	31.285 37	77.34915	31.28548	77.349 81	Sunn y	0	0	0	0	0	0	0	0	0	0	0	0	0	
04.12.2 019	Ravinder Singh	7:14 AM	8:18A M	Buini	1/Buini	2.5KM	31.306 96	77.33637	31.31522	77.338 09	Suny	0	0	0	0	0	0	0	0	0	0	0	0	0	

04.12.2 019	Dola Ram	7:39 AM	8:44A M	Pali	1/Pali	2.65KM	31.284 02	77.35578	31.27875	77.358 14	Suny	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04.12.2 019	Roshan lal	7:25 AM	8:50A M	Averi	1/Averi	2.04KM	31.399 4	77.5882	31.39996	77.588 18	Suny	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04.12.2 019	Naresh Kumar	7AM	8:20A M	Nirm and	1/Nirm and	4.531K M	31.254 88	77.34605	31.24182	77.346 7	P.Clo udy	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04.12.2 019	Devender Singh	7:21 AM	8:50A M	Brow	1/Borw	3.6KM	31.265 8	77.37564	31.2564	77.369 66	Clou dy	7:26A M	7	0	0	0	0	0	7	353	20	31.26582	77.37567	Urban	
04.12.2 019											Suny	7:28A M	4	2	2	0	0	0	0	238	8	31.26583	77.37566	0	
04.12.2 019											Suny	7:30A M	6	1	0	0	0	0	5	260	10	31.26583	77.37565	0	
04.12.2 019	Sanjay Kumar	7:30 AM	8:10A M	Pujar li	1/Pujar li	1.94KM	31.276 11	77.35656	31.26961	77.352 67	Suny	7:48A M	2	0	1	0	0	1	0	0	182	12	31.27242	77.3557	0
04.12.2 019	Pranav Kumar	7:05 AM	8:05A M	Tharl a	1/Tharl a	2.47KM	31.332 19	77.33612	31.3297	77.329 96	Sunn y	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04.12.2 019	Satish Chand	8:35 AM	9:35A M	Sara han	1/Sara han	2.33KM	31.323 84	77.32445	31.31965	77.334 6	Sunn y	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04.12.2 019	Rajesh Verma	7:29 AM	8:34A M	Sha mAn ni	1/Sha mAnni	2.473	31.300 87	77.31781	31.30317	77.318 58	Sunn y	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04.12.2 019	Juagi	7:50 AM	9:25A M	Juagi	1/Juagi	2.15KM	31.336 54	77.35067	31.32987	77.350 47	Sunn y	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04.12.2 019	Bobby Mehta	8:10 AM	10:30A M	Sarg a	1/Sarg a	2.30KM	31.320 41	77.4117	31.3119	77.411 1	Sunn y	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04.12.2 019	Kam Raj	8:38 AM	10:20A M	Khar ga	1/Khar ga	2.8KM	31.275 73	77.39337	31.27929	77.406 32	Sunn y	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04.12.2 019	Sohan Lal	9:05 am	10:42a m	Kindl a	1/Kindl a	2.400K M	31.307 52	77.41531	31.30732	77.409 67	Sunn y	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04.12.2 019	Depikarol ta	7:20 AM	9:35A M	Tuna n	1/Tuna n	4.7KM	31.270 85	77.37643	31.27335	77.389 04	Sunn y	7:20A M	1	0	0	0	0	0	0	354	10	31.27131	77.37867	0	

The monkey has been declared as Vermin vide H.P. Govt. Notification dated 23rd April, 2020. (*See Appendix-XXXII*).

B.1.2 Birds and Pheasants: Himalayan Griffon Vulture (*Gyps himalayansis*), Golden Eagle (*Aquila chrysaetos*), Monal (*Lophophorus impejanus*), Cheer Pheasant (*Catreus wallichii*), Chikor (*Alectoris gracea*), Koklas (*Pucrasia macrolopha*), Kaleej Pheasant (*Leophura leucomelana*), Red Jungle Fowl (*Gallus gallus*), Western Tragopan (*Tragopan melanocephalus*), Peacock (*Pavo cristatus*) Black Partridge (*Francolinus francolinus*), Wood Cock (*Scolopax rusticola*). The brief descriptions of common Birds are as under:-

- **Monal (*Lophophorous impejanus*):**-Monal is the finest amongst the game birds, which is fairly common in remote Fir and Kharsu Oak Forests above 9,000 feet elevation. Their shooting is prohibited throughout Himachal Pradesh.
- **Western Tragopan (*Tragopan melanocephalus*):** This pheasant is threatened and species exists in the north facing side in Kurpan and Anni Valley.
- **Koklas Pheasant:** This species occurs between 2200 mtrs to 3000 mtrs and often observed with Monal pheasant in Kurpan and Anni valley.
- **Kaleej pheasant:** It is also common in Anni/Kurpan Valley and 15/20 area of the tract.
- **Cheer Pheasant (*Catreus wallichii*):** *Catreus wallichii* is tailed pheasant which keeps in small coveys of five or six on precipitous hill sides or ravines covered with tall grass, scrub and oak Forests. It is found only in the elevation ranging from 4000 to 8,000 feet, but is rather rare.
- **Chukor (*Alectoris gracea*):** *Alectoris gracea* is another game bird common throughout the Division up to 9,000 feet. It is generally found in grassy and bushy areas near rocky places.

2B.1.3 Reptiles: Himalayan pit viper (*Ancistrodous himalayanus*), Common Indian Krait (*Bungarus caeruleus*), Rat Snake (*Pygas mocosus*), Common Indian Monitor (*Varanus monitor*), Rock Lizard (*Agamo tuberculata*), Blood Sucker (*Techydrmous Spp.*)

2B.1.4 Fishes:-Trout Fish (*Oncorhynchus mykiss*), Mahseer Fish (*Tor chelynoides*).

2B.2: Injuries to which the Fauna is Liable: The fauna of the tract is decreasing due to reduction of the habitat as a result of ongoing development activities. The biggest enemy of wildlife is man himself. The other hazards to the fauna are epidemics, atmospheric influences, Animals and fires. The need of growing population is the cause of Animal-human conflict. The normal living conditions of the wild life are disturbed which is a matter of concern. The following are the hazardous influences threatening the wild life:-

i) Habitat Destruction: The extension of many species is often associated with the denudation of their natural habitats, owing to ever increasing biotic pressure Forestry operations, and development activities like construction of roads and buildings etc. taking place in the natural habitats of wildlife. Roads restrict the movement of fauna. Corridors connecting two vegetation zones gradually vanish due to various developmental activities, which again restrict the movement of Wildlife especially bigger herbivores. The shrinkage of corridors has resulted in the confinement of these herbivores in a particular territory, which was not so in the past. The fragmentation of the Forests has also been causing problems to the avian fauna, mega carnivores and lesser carnivores. Crop raiding and human casualties due to the attack of Wild Bear, macaques, leopards etc are the main consequences which villages are experiencing.

ii) Environmental and Ecological Factors: Environmental factors are food, water and shelter, which are most important components in a habitat. The shortage of the above components is often associated with the habitat destruction. Plant life, upon which Animal subsist has an

important role in the well being of the Animals. Where grazing has been a real problem, the available food has to be shared by the wild fauna and cattle population.

Water is another component which determines the existence of fauna. Water source in the Wilderness are also competed upon by cattle population and wild fauna. Ecological factors like temperature, humidity etc also affects Animal life. Seasonal variations of weather such as severe drought can have marked effect of wildlife. Humidity also has an effect on the loss of moisture from the body of certain Animals.

iii) Fires: Fires play havoc with wildlife. The wild Animals get trapped in fire and killed. Most susceptible are the young ones. Fires destroy eggs, micro-fauna and nests. There is considerable loss of habitat too.

iv) Epidemics: Epidemics amongst the wildlife is not a common feature, yet deer and antelopes are susceptible to diseases being transmitted through domestic cattle grazing freely in Forest.

v) Atmospheric Influences:-The adult are seldom affected by the climatic disturbance but the young once suffer casualties mostly from frost. The hatching of birds is badly affected by heavy rains. Drought reduces the water sources and threat to wildlife increases.

vi) Hunting/Poaching: In spite of complete ban on hunting, the stray incidences of hunting wild Animals do take place particularly, when the Animals migrate to lower elevations due to unfavorable conditions. The damage to orchards and agriculture crops prompts local people to resort to hunting.

vii) Climatic Conditions: Sometimes the adverse climatic conditions like heavy rains, heavy snow, and prolonged drought affect the wild Animals particularly the young ones.

viii) Disease Transmission: Epidemics constitute one of the main factors for the depletion of our fauna. Very little work has been done on the detection and treatment of wildlife diseases in Himachal Pradesh. The diagnosis of free wild Animals is very difficult but nevertheless, extremely important. Several communicable diseases of bacterial, viral and protozoan origins occur among wildlife, Wildlife and domestic cattle suffer from almost similar diseases and the chance of transmission is extremely high one such example is Foot & Mouth disease.

2B.3 Protection of Fauna:

Following are the measures for protection of fauna

- (i) Wildlife (Protection) Act, 1972 prohibits shooting and hunting of wild Animals and trade in Animal articles of trophies. All the statutory provisions and regulatory measures of the Act should be enforcing strictly.
- (ii) There are enough water streams and springs in the area and water shortage is not a major problem. Grazing by local Animals however needs to be controlled/regulated so that the herbivores get enough food especially in lean months.
- (iii) Fires in summer in some localities and majority in winters (due to negligent panwi burning) cause considerable damage to the existing wildlife. Therefore effective fire protection measures and control of fires will help to a great extent in protection of wildlife.
- (iv) Notice boards having useful information and restrictions should be established at prominent entry points at the boundaries of Forests. These should be in Hindi/English.

- (v) Cases of cattle damage by leopard, other carnivores and bear are often reported in the tract. This is due to shortage of prey in their habitats. Although compensation is paid for the losses, yet it is insufficient to cover the complete loss. Effort should be made to provide timely and adequate compensation.
- (vi) Bears and porcupine cause damage to the agriculture fields. There is no compensation available for such damage; people are often tempted to do away with the damaging Animals. A suitable crop compensation policy/ crop insurance scheme is only likely to helpful to people. Therefore, the Government should frame a policy for addressing the problem of crop damage by wild life on priority as applicable in the other States in India.
- (vii) Spreading of the message of awareness and conservation can have good results. In this context celebration of wildlife week, organizing Nature clubs in schools and colleges and involvement of N.G.O.'s is called for. The ultimate aim should be the involvement of local population in conservation of biological diversity.
- (viii) Renewal of existing arms licenses & grant of new ones to be judiciously one subject to condition that arms will deposit with the Police Department especially in winter season in every years on set of harvesting of crops to avoid any misuse of gun/arms under the provision of Wild Life (Protection) Act, 1972.
- (ix) Adequate patrolling staffs particularly of Fgds in fields are must for the protection of wild life in outside the Protected Area.
- (x) Wildlife and nature information centers should be established at Sarahan/Bagipul, Anni/Chowai and Nither/Margi. So that the local inhabitants/ tourists visiting/crossing the area can be educated about the importance of wildlife, Forest conservancy, ecological balance and threats to wildlife.

CHAPTER III

UTILIZATION OF THE PRODUCE

3.1 Agricultural Customs and Wants of the Population:

The local inhabitants of the tract are hard working and are busy in growing the seasonal agricultural crops besides horticulture and dairy farming. The population of the tract by and large is agriculturist and horticulturist and depend on Forest for its existence. The day to day needs for fuel, fodder, grass grazing and timber etc. are met with from the Forest. The land holding are small and economical. Forest in mountains constitutes the prime source of fodder and grass for Cattle, Fuel wood, fertilizer, fiber and a host of other produce. About 90% of the total population of the State is rural and is dependent on Forest, for meeting their needs of fuel wood for cooking and heating purposes. In Himachal Pradesh the domestic needs of timber for construction of houses are also met from the Forests through the inherent TD Rights. Branches of trees are also lopped for sporting of vegetable crops. Leaves of trees including needles of Chil pine constitute the bedding material for the Animals during winter and rainy seasons. People depend on Forests for timber & other Forest produce. The land holdings are small and un-economic. The area is not self sufficient in agricultural commodities, however horticulture has picked up very well in this division.

Supplementary income of people has significantly improved through a variety of development works undertaken by different Govt. agencies / Projects over the past. As a result of improvement in economy of the tract standard of living of general masses have improved. Majority of the people live in properly designed pucca houses. Education is spreading. Mechanization of agriculture is also coming in though at a slow pace.

There are two distinct crop seasons i.e. Rabi and Kharif. The main Rabi crops grown are Wheat and Barley. The principal Kharif crops are Rice, Maize, Millets including the main cash crop like Potatoes, Peas, Pulses etc. which are cultivated in the agricultural field. The area under different crops varies with the availability of irrigation facilities, physiographic condition, fertility status, kind of soil and nature of cultivator. The vegetation growing along the boundaries of field are the Forests of Chil, Kail, Cedralla, Aesculus, Morus, Deodar, Spruce, Oaks, Celtix, Pyrus, Grewia, Prunus, Juglans and Bauhinia etc. The small terrace shaped fields are ploughed with the help of pair of bullocks and the plough is made of timber. The conventional agricultural practices in these hilly slopes give rise to soil erosion in the cultivated fields. In some areas people have resorted to apple orchards especially the area between Chowai and Dalash and around Arsu and Nither. In other areas also large scale apple plantation has started. There are mainly apple orchards except near Jagat-khana and Luhri, the local people has raised the orchards of Guava, Citrus and Mango etc. The people are progressively taking up to orcharding due to better remuneration with fewer efforts. In the lower elevation the people have raised stone fruits orchards like Almonds and plumb. In the remote locality the people raise *Canabis sativa* cultivation to extract fibres for making ropes, shoes etc. and its seed are eaten by the local people. In this tract some families manufacture baskets or locally called 'Kiltas' out of *Arundinari* spp. for their bonafide use and sale to the local Right Holders. Large flocks of Sheep and Goat are reared for wool and meat. The people have got recorded Rights in the Settlement for grazing the various Forests. The collection of Gucchi, other medicinal herbs and their export have also added incomes of the local people. The people mainly depend on Forest work to supplement their requirements of agriculture implements, fuel, grazing, grass, fodder leaves for manure, building stone and various medicinal herbs etc. Supplementary income of people has significantly improved through a variety of development works undertaken by different Govt. agencies / Projects over the past.

The tables below gives the statistics of human population on the basis of census for the year 2011 along with the cattle population is tabulated in table No. 3.1 & 3.2.

Table No. 3.1
Human Population

Year	Name of Tehsil/C D Block	Household (In numbers)	Human Population (In numbers)		Total Human Population (In numbers)	Schedule Cast (In numbers)	Schedule Tribe(In numbers)	Others (In numbers)
			Male	Female				
2011	Anni	12292	29077	27840	56917	17242	157	39518
2011	Nirmand	12057	27002	26087	53089	23886	180	29023
	G.Total	24349	56079	53927	110006	41128	337	68541

Source: District Census Handbook, Census of India, 2011

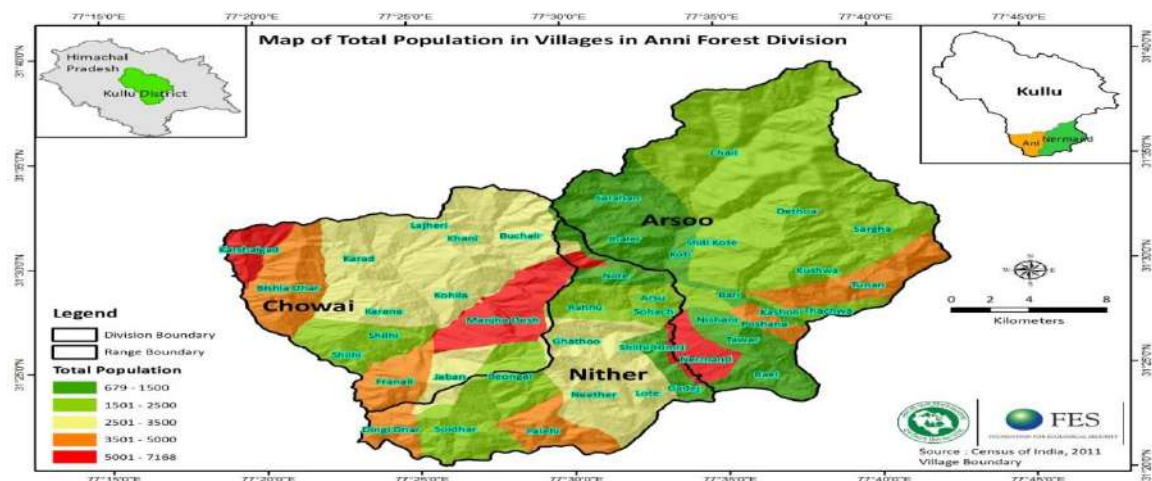
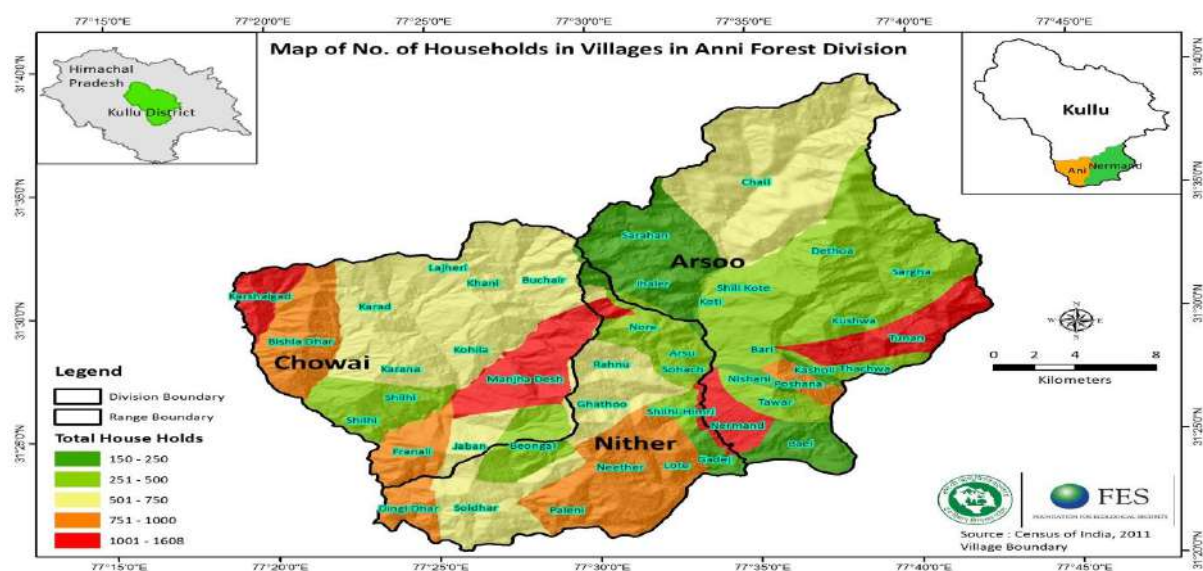
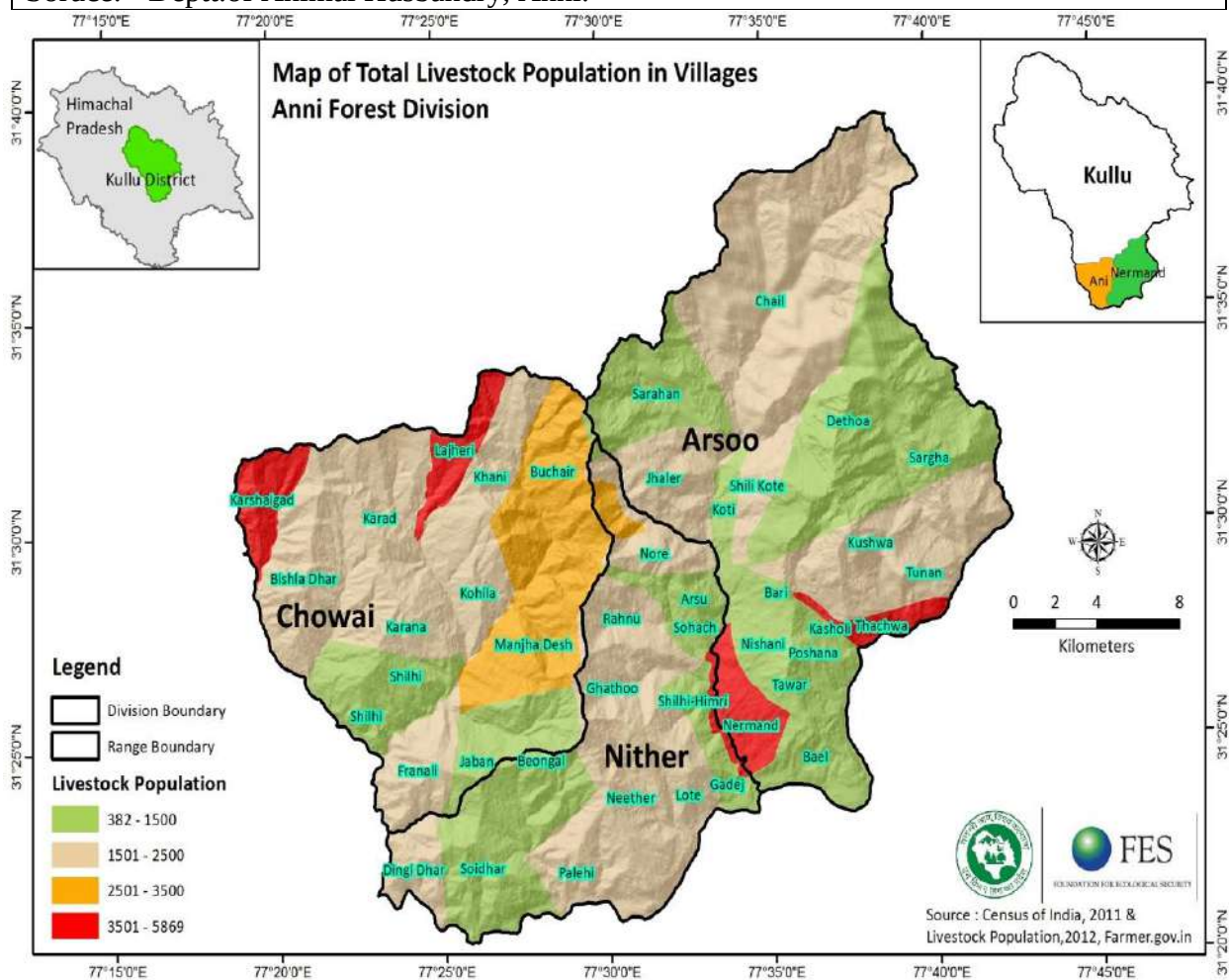


Table No. 3.2

Live Stock Population

Sr. No.	Name of Panchayat	Name of Animals/Number						
		Cattle	Buffalos	Sheep	Goat	Donkey	Mule	Total
1	Kohila	943	0	536	430	0	0	1909
2	Kungash	1030	42	29	430	0	0	1531
3	Lajheri	1224	0	1957	650	0	15	3846
4	Majhadesh	2206	0	773	1055	0	9	4043
5	Palehi	1603	0	36	435	2	0	2076
6	Shilhi	162	0	165	159	0	0	486
7	Soidhar	1075	178	63	555	0	0	1871
8	ShilhiHimri	249	0	39	71	0	2	361
9	ShiliKote	1263	0	1387	5	0	0	2655
10	Sohach	677	1	66	5	1	0	750
11	Tawar	561	0	0	0	0	0	561
12	Thachwa	50	0	0	0	0	0	50
13	Tunan	1112	0	201	582	0	8	1903
	Total	12155	221	5252	4377	3	34	22042

Source: - Deptt. of Animal Husbandry, Anni.



3.2 Markets and marketable produce:

Prior to the World War II, there was all around depression in the Timber Market. During the World War II, steep rise the prices were witnessed which continued even after the World War II. The demand for Timber has been increasing since then. After the independence of the country and the execution of five year plans and consequent development in the financial position of the people, the demand for Timber increased manifold. The Fir, Spruce and Broad Leaved Timber which was found in the remote area and had no market before the second World War was now in great demand due urbanization of rural areas. There is little market for the Forest Produce and the demand of local people is being met with from the Forest as per recorded Rights in the Settlement. The primary marketable products of this division are timber, resin, fuel wood etc. The commercial exploitation of the Forests has been transferred to the Himachal Pradesh Forest Corporation Ltd. since 1982, when the H.P. Forest Produce (Regulation of Trade) Act, 1982 came into force and since then all commercial exploitation is being executed through the HPSFDC.

Medicinal herbs and fruits from the Forests are collected by the right holders for their own domestic use and the local people sell the medicinal herbs collected seasonally as per prescribed four years cycle discussed in detail in Chapter VIII, NTFP (Overlapping) Working circle.

The medicinal herbs like Karu, Patis, and Dhoop etc. are now in great demand and its main market are in Delhi and Amritsar. The price of Guchhi (*Morchella esculenta*) is fructuating year wise and at present, the Guchhi is being sold at the rate of Rs. 3500 to Rs. 6500 in local markets but in International Market, it is sold at the rate Rs. 10000-15000 and is mainly for export to Middle Eastern Countries. The *Dioscoria* spp. and *Berberis* spp. roots yet other itmes which are sold from this tract to the industries in the plain. However, there is a great need to establish small scale industries to process these herbs in this area so that the economy of the people can be improved.

3.3 Demand and supply of Forest produce:

3.3.1 Timber: The demand of almost all Forest produce is ever increasing and it definitely has huge pressure on Forests. Although the state has imposed ban on green felling yet meeting requirements of the people is a challenge. All the Forest produce like timber, fuel wood, NTFP are in great demand. The yield position of PB-II, PB-III is on plus side in Deodar-Kail and Chil Working circles.

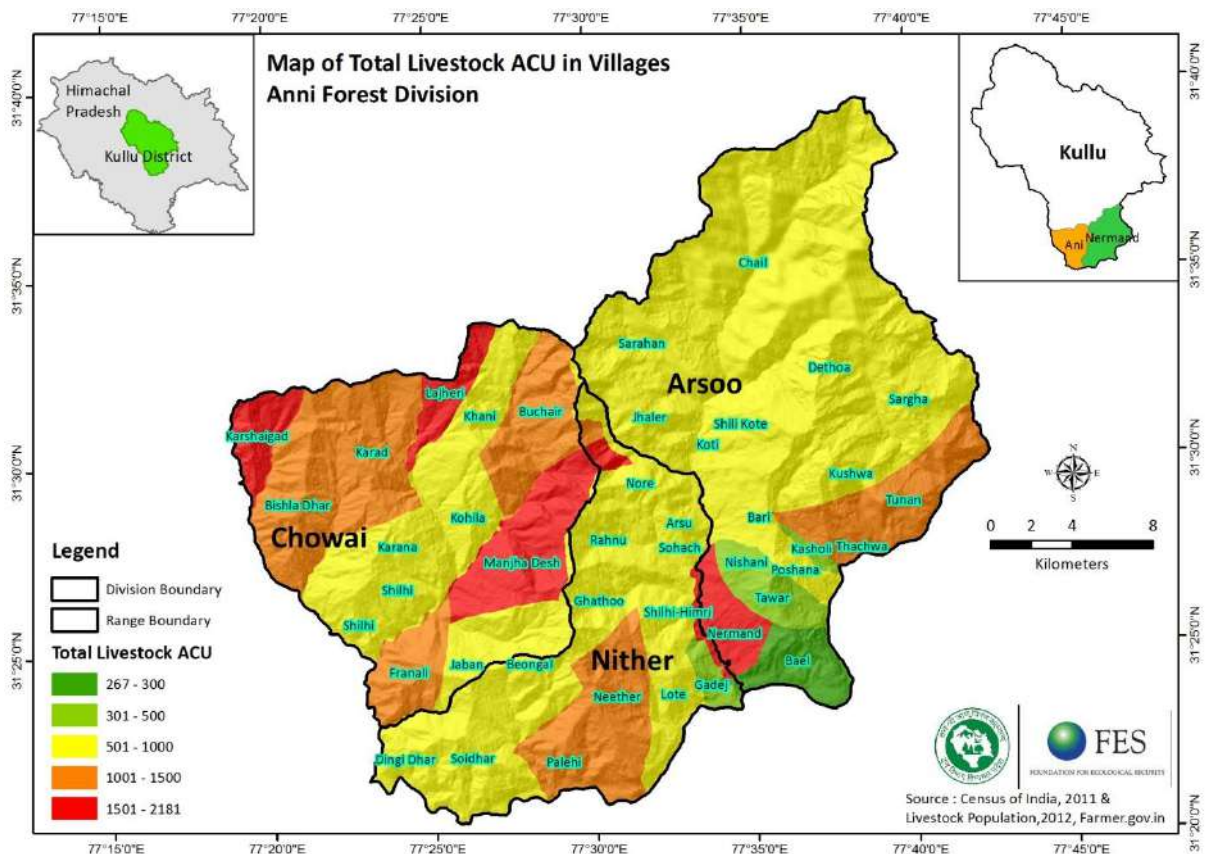
The major marketable Forest produce is coniferous Timber viz Deodar, Kail, Fir, spruce and Chil. The harvesting is being done by the H.P.State Forest Development Corporation Limited. The Timber of various species removed (standing volume) from the tract is given in the Table No. 4.1 in Chapter IV.

3.3.2 Fuel wood and Charcoal: The requirement of fuel wood in the division for domestic use is decreasing due to coming up of LPG connections. Therefore, the LPG has significantly reduced the requirement of fuel wood (except in higher zone of the tract) but the villagers enjoy privilege of getting free fuel wood from Forest and very often resort to heavy lopping and stripping of bark of Ban oak. Indiscriminate felling of Ban oak in the past has left little scope to fell more ban oak trees which is the main source of fuel wood and charcoal in the tract.

3.3.3 Fuel wood Requirement: People depend on fuelwood for cooking and heating in this region. The local people meet the requirement of fuelwood from Forest as well from their private land. Besides this agriculture waste and LPG gas are also used. Subsidy on LPG should be increased so that pressure on Government Forest can be reduced. The H.P.State Forest

Development Corporation Limited has also opened fuel sale depot at Ropri (Chowai Range) during 2015.

3.3.4 Forest Grazing and Fodder requirement: Large number of un-economic and poor bred domestic cattle is kept for farm work as well as manuring purposes. Stall feeding is still little known in the tract. The villagers depend for their grazing requirements upon the Forest resources only. The local people keep the dry grass/Hay (locally known as *Toli*) in the upper belt for their winter requirements where the area is under snow cover. Un-restricted grazing is practiced in all the Forests except in the closed plantation area. The cattle are left loose throughout the day and they wonder all over in the neighboring Forests in search of fodder. Pressure of grazing near thickly populated villages is very heavy. The cattle population of the tract is tabulated in the table No 3.2 under paragraph No.3.1.



In this tract, the areas of the Demarcated Protected Forests/Undemarcated Protected Forests are generally open to grazing by Right Holders cattle, sheep and goats. Divisional Forest Officer, however, has the power of closing and fencing areas as he may consider necessary in the interest of Forest Conservancy. The right of grazing admitted is too liberal. The number of cattle to be grazed is not fixed.

3.4 Medicinal Herbs/NTFPs:

Medicinal herbs and fruits from the Forests are collected by the local people for their own domestic use and for sale in the market.

The detail of NTFP being exported from Anni Forest Division under approved four year cycle is given in table No.1.9.of Chapter-I under paragraph 1.17.

3.5 Method of Harvesting and their Costs:

In the past the felling, extraction and conversion of Timber was done through open public auction of the lots to the private contractors. Since the nationalization of the Forests, extraction and all the logging operations are being done by the H.P. State Forest Development Corporation Ltd. Similarly Resin Tapping too is done by the H.P. State Forest Development Corporation Ltd.

Because of increase of labour cost, the cost of extraction has also increased. As per record of HPSFDC Ltd., the latest approximate cost of extraction of sawn wood per cum for the year 2018-19 excluding royalty are tabulated in table No:- 3.3

Table No 3.3

Timber extraction cost statement

Sr. No.	Name of Work	Timber cost
		Per cum (Rs.)
1	Lopping and felling	80 per M3
2	Sawing and Conversion	Timber=2557/- F-Wood=242/-
3	Carriage from Forest to roadside	Timber=2280/- F-Wood=944/-
4	Carriage by trucks	Timber=1041/-
5	Contingency charges and establishment.	1470/- M3

(Source: - HPSFDC Ltd. Rampur)

The detailed cost of resin extraction are tabulated in table No: - 3.4

Table No-3.4

Sr. No.	Name of Work	Cost per quintal
		(Rs.)
1	Setting up of crop including collection charges	2670
2	Resin Extraction up to R.S.D	
3	Store Consumed	
4	Carriage Charges	
5	Establishment Charges	1470
6	Miscellaneous Charges.	

(Source: - HPSFDC Ltd. Rampur)

3.6 Lines of Export:

There has been revolutionary development of network of roads (metal led and un-metal led) which have significantly boosted up export of Forest produce from the tract. From Forest up to road side, the Forest produce is generally transported manually. There after the Forest produce is transported by roads. Length of main roads is tabulated in table No: - 3.5

Table No-3.5

Sr. No.	Name of Road	Distance in Kms.
1	Anni to ReckongPeo	152
2	Anni to Nahan	250

3	Nither to Nahan	255
4	Brow to Nahan	258
5	Neether to Baddi	184
6	Neeter to Kaurik	290

3.7 Past and Current Prices:

The Average royalty rates of timber obtained from the Forest Corporation during the year 2007- 2008 to 2010-2011 are tabulated in table No:- 3.6

Table No.-3.6

Royalty rates/average rates per cum (Rs.)

Year	Deodar	Kail	Fir/Spruce	Chil
1996-97	11552	10249	4927	4209
1997-98	12707	11274	5419	4630
1999-2000	15375	13641	6557	5603
2000-01	16913	15005	7213	6163
2001-02	18604	16506	7934	6779
2002-03	20465	15156	8728	7457
2003-04	22511	19972	9601	8203
2004-05	24762	21969	10561	9023
2005-06	27238	24166	11617	9925
2006-07	29962	26582	12779	10918
2007-08	33389	32232	13200	10600
2008-09	38614	38044	17271	15372
2009-10	44031	38044	17271	15372
2010-11	47624	38044	17271	15372
2011-12	47624	38044	22437	18630
2012-13				
2013-14	47624	38044	22437	18630
2014-15	55904	38044	22437	21117
2015-16	55904	40126	22437	21117
2016-17	55904	40126	22437	21117
2017-18	55904	40126	22437	21117
2018-19	65495	46896	26141	28237
2019-20	79237	51980	32778	36503

(Source: - HPSFDC Ltd. Rampur)

The average royalty rates for Resin are tabulated in Table No: - 3.7

Table No 3.7

	Average royalty rates of resin per blaze (in Rs.)
1996	
2007	23.00
2008	27.70
2009	33.70
2010	35.00

2011	65.00
2019	42.00

The present average market rates of various Forest produce are tabulated in Table No: - 3.8

Table No.3.8

Average Market Rates (2019-20)

Sr. No.	Name of Forest Produce	Unit	Rates per Unit (Rs.)
1	Chil Timber	cum	9148
2	Deodar Timber	cum	35832
3	Kail Timber	cum	20154
4	Rai Timber	cum	10837
5	Mixed Fuel wood	cum	2928
6	Charcoal	cum	-

(Source: - HPSFDC Ltd. Rampur)

CHAPTER IV

ACTIVITIES OF FOREST DEVELOPMENT CORPORATIONS IN HARVESTING AND MARKETING OF FOREST PRODUCE

4.1 General Description:

The H.P. State Forest Development Corporation Ltd. an undertaking of the H.P. Government which came into existence on the 25 of March 1974. This corporation deals with the marketing mainly Timber, Fuel wood, Pulpwood, Bamboos, Khair, Resin, Turpentine oil and subsidiary products viz. Phenyl, Wamish, Black Japan etc. The H.P. State Forest Development Corporation Ltd. has been mainly created with the following objectives.

- i) To carryout extraction of timber and resin on scientific lines by adopting suitable modern techniques.
- ii) To eliminate the contractors agency in respect of works of timber extraction and resin tapping.
- iii) To obviate the chances of illegal felling of trees, illicit tapping of resin and other malpractices.
- iv) To work the Forest on commercial lines by recycling of funds for works and also by raising funds from financial institution as per requirements.

The H.P. State Forest Development Corporation Ltd. took over the complete working of the Government Forest w.e.f. 25/01/1983. The H.P. State Forest Corporation has been working salvage lots comprises of dry diseased, uprooted and damaged trees, handed over to them for working which the lots of green trees coming in the road alignments are also handed over for working through H.P.S.F.D.C. after obtaining prior approval of the Central Government under Forest Conservation Act 1980. The objectives of Forest corporation reveals that sustainable extraction of produce from Forest is assured and this guarantees the upliftment of socio economic status of State by providing benefits to local people directly and keeping Forests intact by scientific exploitation indirectly. Forest Development Corporation is indeed adding in increased income of rural as well as urban population by way of giving employment during exploitation in rural areas and processing in urban areas. A single unit of rosin factory gives employment to large number of people hailing from both rural and urban populations. Forest Corporation is adding income to State Government by way of selling quality products generated from resin, turpentine and salvage lots etc.

After nationalization of Forests in 1983, standing trees are being handed over to HP State Forest Development Corporation at rates decided by the Himachal Pradesh Government from time to time. Only dry and fallen trees referred to as salvage are handed over to Divisional Manager, HPSFDC Ltd. Rampur who has jurisdiction over this division. The H.P. State Forest Development Corporation carries out extraction through conventional methods and there is no sign of any mechanization to be introduced in the future. Felling is done by axe or saw. The trees are cut in to logs of different sizes with the help of saws. These logs are further squared with help of axe and then sawn into scantlings by using pharnies. All these works are executed through labour supply mates under the direct supervision of the Forest Corporation Staff. The details of extraction of Timber for the last Nineteen years are tabulated in table No: - 4.1.

Table 4.1

Timber yield

Year	Species	Volume marked in m3	Volume Felled in m3	Volume converted in m3	Converted %
2000-01	Timber	7185.473	7185.473	3017.890	42%
	BL	0	0	0	0
2001-02	Timber	22624.255	22624.255	9728.420	43%
	BL	0	0	0	0
2002-03	Timber	15589.950	15589.950	6625.720	42.50%
	BL	1090.600	1090.600	1744.960	160%
2003-04	Timber	12784.100	12784.100	5121.310	40.06%
	BL	10302.000	10302.000	15659.040	152%
2004-05	Timber	258529.480	25829.480	10626.240	41.14%
	BL	10626.900	10626.900	17689.530	166.46%
2005-06	Timber	11585.790	11585.790	4904.260	42.33
	BL	3120.450	3120.540	4882.390	156.46%
2006-07	Timber	3024.510	3024.510	1164.430	42.33%
	BL	4645.120	4645.120	5880.250	126.59%
2007-08	Timber	5313.100	5313.100	2247.440	42.30
	BL	8456.701	8456.701	12640.230	149.47%
2008-09	Timber	20207.320	20207.320	8571.940	42.42%
	BL	5556.611	5556.611	7733.130	139.17%
2009-10	Timber	10274.130	10274.130	4500.060	43.80%
	BL	4172.267	4172.267	5695.970	136.52%
2010-11	Timber	0	0	0	0
	BL	0	0	0	0
2011-12	Timber	2779.200	2779.200	1163.920	41.88%
	BL	767.586	767.586	1087.510	141.68%
2012-13	Timber	2631.210	2631.210	1180.04	45%
	BL	0	0	0	0
2013-14	Timber	5544.926	5544.926	2439.76	44%
	BL	7120.859	7120.859	11446	161%
2015-16	Timber	4007.970	3219.97	1448.98	45%
	BL	992.9	885.39	1417	160%
2016-17	Timber	3352.120	2659.55	1210.29	45%
	BL	569.08	176.08	282	160%
2017-18	Timber	6008.30	3786.75	1657	44%
	BL	0	0	0	0
2018-19	Timber	6250.39	4897	2203	45%
	BL	6282.468	4388	6361	145%

(Source: HPSFDC, Ltd. Rampur)

4.2 Forest Development Corporation and Harvesting:

4.2.1 Timber Extraction Work- Timber Lots: Forest development corporation in Himachal Pradesh commenced in 25th March of 1974 with the mandate to deal with marketing of timber, fuel wood, Pulpwood, Bamboo, Khair, resin turpentine oil, subsidiary products viz phenyl, Varnish, Black Japan viz a viz Fiber board factory at Baijnath is presently engaged in the joinery works, timber chemical treatment and timber seasoning for Government as well as private timber. With complete nationalization of timber extraction works in HP through the aegis of the H.P. State Forest Corporation Ltd, both in Govt. and private Forests, it has become absolutely essential to ensure uniformity in working procedures and maintain records in all Forest Working Divisions

(a) Marking: Marking is to be done by the territorial staff in accordance with the instructions issued by the Pr. CCF HP and concerned Conservator of Forests. The marking lists should be prepared in triplicate.

In case of salvage markings, the event (Fire, wind, snow etc.) requiring salvage markings should be clearly mentioned. The trees standing on very steep and rocky portions, likely to be damaged during fellings or conversion should not ordinarily be marked. The facsimile of the hammer mark has to be affixed on the marked tree on the lower most portion of the tree on downhill so that no difficulty is felt while carrying out fellings.

(b) Time Schedule for Working: The list of Forests to be marked each year must be intimated by DFOs to DM by 30 June every year. In case of Khair, Chil, fuel wood coppice Bamboo etc. lots, the marking list must be submitted by 15th September for the year in which the work has to be started. No marking list for such type of felling should be received either by the Director or Divisional Manager without the approval of Managing Director after 30th September in case of Chil lots and 15th December in case of high level conifer lots viz: Fir, Spruce, Deodar, Kail and temperate Broad leaved species.

The working period of a lot related to the standing volume would be as under:-

- i) Lots having standing volume up to and including 2832 M³ = 1 year
- ii) Lots having standing volume of 2833 M³ to 8496 M³ = 2 year
- iii) Lots having standing volume of 8497 M³ to 16992 M³ = 3 year
- iv) Lots having standing volume of 16993 M³ to 28320 M³ = 4 year
- v) Lots having standing volume of 28321 M³ and above = 5 year

(c) Due dates of payment of royalty installments from lots are fixed in table No.:- 4.2

Table-4.2

Sr. No.	Lots	Period
1	2	3
I	Chil Lots	1/3 by 15 th January
		1/3 by 20 th March
		1/3 by 15 th June
II	Khair and Coppice lots	1/3 by 15 th February
		1/3 by 15 th March
		1/3 by 15 th June
III	High lying Coniferous one year lots	½ by 30 th November
		½ by 20 th March.

(d) Lead Measurement:

No change in the length of lead will be allowed after it has been measured by a committee comprising of one gazetted officer of concerned Forest working division one gazetted officer of the adjoining Forest working division and Assistant Manager of the concerned lot.

(e) Handing over and Taking over of the Marked Forests:

The marked Forests should be handed over to the Divisional Manager, Sub Divisional Manager or Assistant Manager under proper receipt. The possession should be given after the Forests have been inspected and the description in the markings in respect of illicit fellings or other deficiencies in the marking like fit, unfit etc should be pointed out and reconciled. Any discrepancy noticed after taking over will be to the account of Forest Working Division.

4.2.2 Resin Extraction Work:

4.2.2.1 Resin Lots: Resin lots are handed over annually to H.P. State Forest Development Corporation at Resin royalty rates fixed by Himachal Pradesh Government for every year. Earlier the extraction was done by cup and lip method which proved to be disastrous for many Forests. Now there is complete shift to rill method of extraction which gives equally good yield as well as obviates the likely damage by fire and wind. The instruction of Resin Tapping is contained in Punjab Forest leaflet No. 13 which shall be followed. The detailed techniques of Resin Tapping have been discussed in Chapter-IV in Chil Working Circle. However, the detail of resin extraction is tabulated in Table No: - 4.3

Table 4.3

Resin yield

Year	No. of blazes	Yield of resin	Average yield per 1000 blazes (Qtls.)
1	2	3	4
2000-01	34754	1834.300	52.78
2001-02	41426	2154.540	52.00
2002-03	53059	2549.942	48.05
2003-04	48919	2322.997	47.49
2004-05	48919	2322.997	47.49
2005-06	46197	2013.550	43.58
2006-07	46197	2180.060	47.19
2007-08	46129	1988.490	43.11
2008-09	44279	1876.920	42.38
2009-10	44279	1398.430	31.58
2010-11	0	0	0
2011-12	26202	520.950	19.88
2012-13	19948	325.03	16.29
2013-14	19948	682.00	34.18
2014-15	19948	673.30	33.75
2015-16	27310	892.77	32.69
2016-17	40546	1478.89	36.47
2017-18	40546	1452	36
2018-19	37046	1289	35
2019-20	40546	848	29

(Source: HPSFDC Rampur Working Division, Rampur)

4.3 Marketing of Forest Produce:

The local people are mostly agrarian. The land holdings are much less than the required livelihood. Due to lack of motorable road and poor marketing infrastructure in the tract, the local people cannot sell their meager agricultural products in the open market. Similarly the local people also exploit NTFPs from Non Protected areas of the tract to supplement their incomes but due to lack of poor marketing infrastructure and value addition, they always used to sell their produce through middle man in the market. It is therefore, quite imperative that the Forest department provide ready marketing inputs through co-operative societies to exclude middle man, so that they could get fair price for their goods and avoid over exploitation of NTFPs from Forest. Scientific inputs to enhance cultivation, storage and value addition and marketing shall go a long way in enhancing income of local people through maintaining traditional knowledge and help reduce pressure on the national resources of the tract in sustainable manner.

There is little local market for the Forest produce; the demand of local people being met mostly through exercise of rights. Timber extracted from this division is marketed through sale depot Baddi. The annual sale turn for the year 2018-19 was Rs. 385.32 Lakhs per data given by Divisional Manager, Rampur, and the Anni Forest Division contributes to only 45 %. The resin is processed and further sold through R&T Nahan and Bilaspur factories. The detail of of Annual Sale turn is tabulated in Table No. 4.4.

Table No.4.4

Average Sale Rate during the year 2018-19			
Species	Vol.in M3	Rate in Rs./ M3	Amount in Lakh
Deodar	554.049	33986	188.30
Kail	113.514	18925	21.48
Fir	1402.303	12518	175.54
Chil	0	11311	0.00
Total	2069.866		385.32

Source: - HPSFDC Ltd., Rampur.

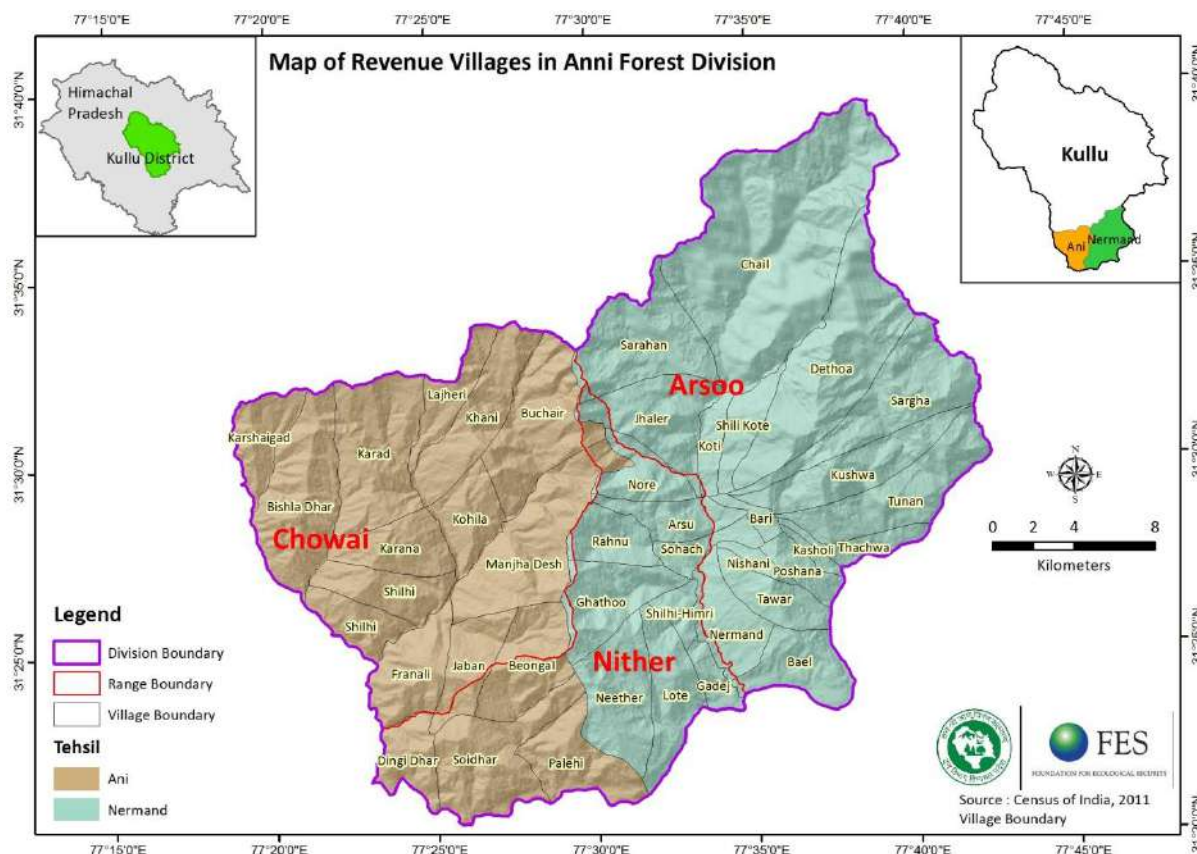
4.4 Result of Socio Economic Survey:

4.4.1 Ethnic identities, Tradition, Custom and Dependence of Local People on Forests:

There are 58 Panchayats (Anni Block-32, Nirmand Block-26) comprising 43 revenue villages (Anni Block-17, Nirmand Block-26) in Anni Forest Division. According to the known history of District Kullu, it was founded in the 1st century of Christian Era by one Sh. Behangam Anni Pal whose forefathers originally came from Tripura and had migrated from there to Allahabad and then to Mayapuri near Haridwar. There are many legends associated with the name of Sh. Behangam Anni Pal. According to one legend, the people of higher valley of Kullu were suffering under the repressive regime of Thakurs of Spiti and their keen desire was to overthrow the Thakurs. But Sh. Behangam Anni Pal organised the Upper Valley's first revolution. And he was duly blessed by powerful Goddess Hidimba and thus Pal dynasty was established. Its original capital was established at Jagatsukh and nearly ten generations ruled from there, till it was shifted to Naggar and it was finally moved to Kullu. Later on many Rulers, ruled the Kullu. But Bidhi Singh, the son of Raja Jagat Singh conquered some area in the North and also the tract of Lahaul. His son Maan Singh was also one of the outstanding Rulers of the State who fought many battle with Ruler of Mandi and completed the conquest of Outer Seraj as well as annexed Chhota and Bara Banghal from Mandi State. The Raja of Kullu and his successors

remained contented with the Jagirs and in the year 1849, the Kullu was made Sub-division by the then Kangra District, it was the then under the control of Punjab Government which upgraded this Sub-division to the status of District. The jurisdiction of the state remained same as of erstwhile Sub-division till on the reorganization of composite Punjab on 1st November, 1966, Kullu District along with some other districts was transfer to Himachal Pradesh. The earliest record on the general condition and livelihood patterns of the local people of District Kullu reveals that due to mountains, poor infrastructure development and barren terrain; little grain was produced in the tract. The grain was imported from the plains. The age old system polyandry prevails in most part of the tract of this Division but has been rapidly losing ground to monogamy these days. The age old polyandry system is not encouraging in the society. The dependence of the people on Forest resources was dependable on carrying capacity of Forests in sustainable manner. Their life and livelihood depend upon the rich biodiversity of the Forests. They have been living in harmony with the Forests & wild life since time immemorial. The material existence of the local people depends on Forests to such an extent that they cannot visualize in the absence of biological resources. Their folklores and culture is full of references to the Forests and wild life. There are several rights and rituals where some Forest produce is used one way or another. They have co-existed since time immemorial and will continue to co-exist in a mutually re-enforcing relationship in future also.

During the recent years, the tract of the Anni Forest Division is open to outside influence of culture, has been a great deal of commercialization except some part of the tract. This is because of infrastructure development, Rampur Hydro Power Projects which has brought opening up the tract i.e. road, socio-economic development and education. They have improved extensive development in growing apple and other fruits besides traditional agricultural crops. Since the agricultural crops are insufficient, the local people in remote areas also rear goats and sheep as the secondary occupation and they remained dependent on Forest resources.



In some part of the Division, the conditions of people are not good. People are poor, clinging to old customs, traditions and beliefs. The land holdings are marginal and un-economic. Still the area is deprived of road and social development and not self sufficient in sustenance to their life. No doubt horticulture has picked up very well and playing a predominant role in Jaban Valley, Ladagi-Buchhair, Kungash-Karana, Dalash and in Kurpan Valley and is making them prosperous as fruit growers but rest of the area of the tract, the condition of the people is not good and still has meager income. Very few people are employed on seasonal basis. Employment provided by the Forest Department and other departments which augment their meager incomes in the area of this Division. Secondly people collect and sell the NTFPs to supplement their income.

Due to net work of communications and developmental activities in the fields of Agriculture, Horticulture, Education and Health etc. there is a marked improvement in the living conditions of the inhabitants except in few parts of this Division which is also the main problem of the local people of the area and is dearth of road, health, education and other public utility services etc. The people are facing problem of damages to their agricultural crops by wild Annimals for which they are still depriving their Rights to get compensation due to lack of H.P. Govt. Policy. Secondly, domestic requirement of fuel wood, fodder, Minor Forest Produce and timber for construction and repair for house/hamlet should be the first priority as Constitutional Mandate rather than commercial. Similarly domestic energy, fuel wood needs to be substituted as far as practicable with alternative source like bio-gas, LPG, solar energy and fuel saving devices as a measure of conservation also need to be popularized in rural areas. Alternative measures should be adopted to reduce the social custom based on Forests like people cut one pole for grass storage locally known as “Tolli” every year as a right which should be stopped by providing them alternative angle iron pole on subsidized rate. Stall feeding needs to be popularized in all the villages of the tract to reduce the pressure on the bio-diversity by providing incentive to local people etc. This will help in increasing the Forest cover and maintaining the ecological balance of the tract. Realizing this impact on the society the courts in India have also dealt with cases relating to environment and development. A principle has evolved out of these decisions that the socio-economic development shall have to be made in closest possible harmony with the Forests and environment.

CHAPTER-V

FIVE YEAR PLANS

5.1 General:

The economy of India is based on planning through its five-year plans, which are developed, executed and monitored by the Planning commission of India. Planning in India derives its objectives and social premises from the Directive Principles of State Policy enshrined in the Constitution of India, Article 38 and Article 39 (a), (b) and (c) are cited in the resolution of 15th March, 1950 by which the planning commission was setup. The national planning process was started in 1951 in India with the formulation of First Five Year Plan. The first three five year plans laid thrust on the promotion of agriculture and industrialization, Environment-related issues pertaining to the improvement of human environment such as sanitation, public health, nutrition, water supply and housing got due priority in national programmes under the three five year plans. However, environment protection did not receive any significant recognition under the development planning except the Forest development and soil conservation.

In the past, the Forests of the division have been managed for getting sustainable yield through various Working Plans. The silvicultural fellings were mainly aimed at making the Forest uniform and the regeneration achieved through natural means. Till the early seventies, the emphasis was on planting commercially important species such as Deodar, Kail, Chil, etc. The increasing demands of Forest produce in the state especially that of timber and fuel-wood resulted in focus on large scale plantations of commercially important species. Although the plantation programme started from Ist Five Year Plan but it gained momentum from IIIrd Plan onwards. The brief description of the activities under taken right from 1st Five Year Plans in this Division is given as under:-

5.2 First Five Year Plan (1951-56):

The First Five Year Plan showed maximum concern about rehabilitation of Forest areas, which had been over exploited either to meet the Second World War needs. Little efforts were made to help stabilize soil in highly eroded areas through Afforestation. In response to the Forest Policy of 1952, the Central Board of Forestry, Constituted in 1950 to provide guidance to the Central Government in the formulation of policy and programmes in the field of Forestry. The wastage in conversion and felling of trees was minimized. Besides, manmade Forests of economic species were raised. The national emphasis during this plan was on agriculture, Irrigations and building of dams.

During Ist Five Year Plan the Forests of this division were managed under Shri. K.L.Aggarwal's working plan for Kullu and Seraj Forest Division, which came into force from 01/04/1949 and continued up to the period 1963-64. The new National Forest Policy was formulated in 1952 i.e. during the 1st Five Year Plan and the Forests of the tract were also managed as per prescription of Aggarwal's Plan (1949-50 to 1963-64). The main broad objective of the management were not only to preserve all the existing Forest growth, but also suitably to extend it wherever possible primarily with view to prevent further denudation of hills to stabilize the existing land slips etc. and to maintain an even flow of water in the various streams.

The year-wise revenue and expenditure of the erstwhile Kullu and Seraj Forest Division is tabulated in table No: - 5.1.

Table 5.1**Revenue and Expenditure of Seraj Forest Division during First Five Year Plan**

Year	Revenue (Rs.)	Expenditure (Rs.)	Surplus (Rs.)
1951-52	787054	401456	385598
1952-53	425117	265594	159523
1953-54	252842	232658	20184
1954-55	236355	422422	-186067
1955-56	538671	485080	53591
G.Total	2240039	1807210	432829

(Source: Working Plan by D.P.Kapoor)

Keeping in view the large scale import of food grains and inflationary pressures on the economy, the First Five Year Plan (1951-56) accorded the highest priority to agricultural including irrigation etc. rather than Forestry operation.

5.3 Second Five Year Plan (1956-61):

The Second Five Year Plan seeks/lays stress to rebuild rural India, to lay the foundations of industrial progress and to secure to the greatest extent feasible opportunities for weaker and under-privileged sections of the people and the balanced development of all parts of the country. Both the First and the Second Plan put considerable emphasis on preservation processes, improvement of communications and introduction of degraded Forests, establishment of new plantations, especially of fast growing species, application of modern systems of intensive Forest management, better moderately of inferior varieties by seasoning and preservation processes, improvement of communications and introduction of modern techniques. Large tracts of degraded Forests situated in the former Zamindari estates and princely States came under Government control. Schemes for the demarcation of such areas and preparation of maps were taken up.

During Shri. K.L.Aggarwal's working plan for Kullu and Seraj Forest Division was in vogue. The main broad objective of the management as discussed above, were not only to preserve all the existing Forest growth, but also suitably to extend it wherever possible primarily with view to prevent further denudation of hills to stabilize the existing land slips etc. and to maintain an even flow of water in the various streams. It was during this period that all types of demarcated Forests, irrespective of vegetative association, were included and shelter wood system of regeneration by compartments was introduced for the Deodar and pine Forests. Beside this the Deodar Forests were exploited for revenue with emphasis on regeneration by mainly natural means.

The year-wise revenue and expenditure of the erstwhile Kullu and Seraj Forest Division is tabulated in table No: - 5.2.

Table 5.2**Revenue and Expenditure of Seraj Forest Division during Second Five Year Plan**

Year	Revenue(Rs.)	Expenditure(Rs.)	Surplus(Rs.)
1956-57	603019	512764	90255
1957-58	664013	614694	49319

1958-59	666782	693426	-26644
1959-60	803355	804901	-1546
1960-61	1671224	1249333	421891
G.Total	4408393	3875118	533275

(Source: Working Plan by D.P.Kapoor)

Thus the plan aimed at an increase of 25% in the natural income, rapid in industrialization, large expansion of employment opportunities rather than conservation of Forests, Deodar Forests were exploited for revenue with emphasis on regeneration by mainly natural means. The natural regeneration was supplemented by the artificial regeneration in the form of patch sowing & planting of Deodar.

5.4 Third Five Year Plan (1961-66):

The third plan stressed on agriculture and improvement in the production of wheat, but the brief Sino Indian war of 1962 exposed weaknesses in the economy and shifted the focus towards the Defense industry. The 1965 war led to inflation and the priority was shifted to the construction of dams, cement and fertilizer plants etc. This Five Year Plan seeks to give a more precise content to the social objectives of the constitution and represents a large advance towards their moderately. It takes account of the success and the failures of the first two Plans and sets tasks to be fulfilled in perspective of development over the next fifteen years and more.

Work on the preparation of the Third Plan commenced towards the end of 1958 and was carried out in three main stages. Development of Forest resources was an integral part of the programme for optimum land moderately. Forests have important protective as well as productive functions. They not only supply timber, fuel, fodder and a variety of other products but also have a moderating influence against floods and erosion and help maintain soil fertility.

The country adopted a national festival of tree planting ‘Van Mahotsava’, in 1950 which was started with the objectives of creating mass awareness about the value of Forests in human well being

It is interesting to note that Forest Policy of 1952 retained the concept of reserved Forests” which was enunciated under the earlier Forest Policy of 1894 and placed them under the exclusive control of State Government. Although, the policy accepted the category of “Village Forests” to serve the needs of people in surrounding villages, but it did not grant them the right to manage these Forests. As during the British rule, the approach of State continued to reflect a lack of faith in the capacity of people to manage or protect their Forest resources without State intervention and support, people were in fact seen as a major threat to Forests.

During third Five Year Plan, the Forests of this Division were continued to be managed under Shri. K.L Aggarwal’s Working Plan.

The year-wise revenue and expenditure of the erstwhile Kullu and Seraj Forest Division is tabulated in table No: - 5.3.

Table 5.3

Revenue and Expenditure of Seraj Forest Division during Third Five Year Plan

Year	Revenue(Rs.)	Expenditure(Rs.)	Surplus(Rs.)
1961-62	1152322	1086033	66289
1962-63	688802	1052297	-363495
1963-64	355795	1146266	-790471
1964-65	Data not available.		
1965-66			
G.Total	2196919	3284596	-1087677

(Source: Working Plan by D.P.Kapoor)

During the plan period industrial and domestic demands put a great deal of pressure on Forests leading to serious shortages of wood and sharp increase in fire price rise had to massive illegal felling and inevitable tensions between rural communities and Forest Department. Also, grazing policies remained unimplemented and increasing cattle population continued to affect Forestry's conservation principles. By and large, Forests were accorded low priority in the States on account of other needs of more immediate concern. The indiscriminate use of Forest land for non Forestry purposes increased considerably.

5.5 Fourth Five Year Plan (1969-74):

To increase Forest production, the Fourth Plan envisaged further efforts at creating large scale plantations of valuable quick-growing species and species of economic and industrial importance. A concerted effort at regenerating areas, where Forest produce was removed for industrial uses was taken. The basic principle of Government policy was the minor Forests, pastures and grazing grounds must be managed mainly in the interest of the population of the tract and particularly to serve their requirements of fuel and fodder requirements.

The year 1972 marks a watershed in the history of environment management in India. It was the year in which a conference on Human Environment was held in Stockholm under the aegis of the United Nation. Late Mrs. Indira Gandhi, our then Prime Minister, addressed the conference wherein she attracted the attention of the world community towards our peculiar environmental problems. Pointing out the causes of environmental degradation, she asserted that 'poverty and need' are the biggest polluters. She added that "the environmental problems of developing countries are not the side effects of excessive industrialization but reflect the inadequacy of development. The rich countries may look upon development as a cause of environmental destruction, but to us it is one of the primary means of improving the environment for living or providing food, water, sanitation and shelter, of making the desert green and the mountain habitable.

In 1972, comprehensive national law, the Wild Life (Protection) Act, 1972 was enacted intended solely to protect wild life. A Centrally sponsored scheme "Project Tiger" was launched in 1973 to ensure maintenance of a viable population of tigers in India for scientific, economic, aesthetic, cultural and ecological values and to preserve for all times, areas of such biological importance as the national heritage for the benefit, education and enjoyment of the people.

The year-wise revenue and expenditure of the Seraj Forest Division is tabulated in table No: - 5.4.

Table 5.4

Revenue and Expenditure of Seraj Forest Division during Fourth Five Year Plan

Year	Revenue (Rs.)	Expenditure (Rs.)	Surplus (Rs.)
1969-70	256512	1049339	-792827
1970-71	Data Not Available		
1971-72	457654	1639653	-1181999
1972-73	353505	1561346	-1207841
1973-74	914274	1910116	-995842
G.Total	1981945	6160454	-4178509

(Source: Working Plan of Seraj Forest Division by B.S.Yadav)

Keeping in view the facts and figure, the Fourth Five Year Plan accorded the highest priority to exploitation of high lying Forest for earning of revenue rather than conservation of Forests and improving the condition of the less privileged and weaker section especially through provision of employment and livelihood etc.

At this time government nationalized 14 major Indian banks and the Green Revolution advanced agriculture in India. During this period also the working plan prescriptions of KL Agarwal's WP continued. D.P. Kapoor's working plan came in to existence only in 1972-73. and Sh. D.P.Kapoor's Working Plan (1964-65 to 1978-79) and the main objectives of Kapoor's Plan was to preserve and improve the Forest cover thereby to prevent denudation and erosion, so as to ensure an equitable flow of water in the streams and rivers. Besides this to meet the legitimate domestic and agricultural requirements of the local people for timber, firewood, grazing and other Forest Produce. Further, the other objectives of management were to provide for the requirement of wood based industry and to increase the area under the more valuable species in all localities suited for their growth.

5.6. Fifth Five Year Plan (1974-79):

The fifth plan was formulated against the backdrop of severe inflationary pressures. The major objectives of the plan were to achieve self reliance and adopt measures for raising the consumption standard of people living below the poverty line.

The major objective identified in Forestry in the fifth plan was the creation of large scale man made Forests through institutional financing. The plan proposed a network of State Forest Corporations for establishment and management of manmade Forests. The birth of Forest Corporation and the economic considerations further pushed the ecological consideration to secondary place. The second important objective of the fifth plan was to develop farm Forestry and to improve degraded Forests so as to increase the fuel and timber supply in rural areas. Wild Life Protection also was attended to during this plan. Programmes for development of national parks, strengthening of research on endangered Annimals including project tiger were taken during this plan.

For the control of water pollution, Water (Prevention and Control of Pollution) Act, 1974 was passed. This Act resulted information of Central/State Board for prevention and Control of Water Pollution with primary duties of setting standards, monitoring and legal enforcement.

During this period, the Forest of the tract was managed under Shri Kapoor's revised Working Plan (1964-65 to 1978-79). The proposals of Kapoor's Plan were submitted during 1972-73. Besides managing the Forests as per prevalent Working Plans, the main emphasis had already shifted towards raising the plantations on blank degraded Forests& regenerating the Forests marked for extraction of timber for packing cases. The HP State Forest Corporation Limited came

into existence wef 25-3-1974, registered under **The Companies Act, 1956**. The timber extraction was gradually transferred to corporation since 1976 onward.

The year-wise revenue and expenditure along with plantation activities of the Seraj Forest Division is tabulated in table No: - 5.5

Table 5.5

Revenue and Expenditure of Seraj Forest Division during Fifth Five Year Plan

Year	Revenue (Rs.)	Expenditure (Rs.)	Surplus (Rs.)
1974-75	924467	575501	348966
1975-76	903908	1940149	-1036241
1976-77	458601	1593766	-1135165
1977-78	1897547	1577418	320129
1978-79	3527591	2504449	1023142
G.Total	7712114	8191283	-479169

(Source: Working Plan of Seraj Forest Division by B.S.Yadav)

Stress was laid on employment, poverty alleviation, and justice. The plan also focused on self reliance in agricultural production and defense.

5.7. Sixth Five Year Plan (1980-85):

The sixth plan also marked the beginning of economic liberalization. Development without destruction was the theme of the sixth five year plan, which laid emphasis on the ecological and social security, the major thrust of the plan as regards Forest management and protection was saving the natural Forests from further depletion, formation of new fuel and fodder reserves to meet the growing needs of local population and creation of more National Parks and Wild Life Sanctuaries.

In 1985, the Department of Environment was replaced by an integrated Department of Environment, Forest and Wild life. In addition to this, two powerful agencies were created to tackle specific environmental problem; they are, namely, the National Waste Land Development Board and the Central Ganga Authority, to further improve the implementation of environmental law and policy decisions.

With a view to meeting the basic and economic needs of community, the programme of social Forestry initiated in 1981-82 remained continuing. The social Forestry programme which inter-alia includes Farm Forestry, Extension Forestry, and Reforestation on degraded Forests and Recreation Forestry; those programmes were assisted by several external agencies, including the World Bank, United State Agency for International Development and Overseas Development Agency of United Kingdom. The 20 Point Economic Programme of late Prime Minister Mrs. Indira Gandhi also included Afforestation Social Forestry and Farm Forestry programmes.

The year-wise revenue and expenditure of the Seraj Forest Division is tabulated in the table No: - 5.6

Table 5.6

Revenue and Expenditure of Seraj Forest Division during Sixth Five Year Plan

Year	Revenue (Rs.)	Expenditure (Rs.)	Surplus (Rs.)	Remarks
1980-81	2407190	3529796	-1122606	The revenue and expenditure for the year 1984-85 has been taken from the Seraj Forest Division, since the data for the ranges of Anni Forest Division which was in the administrative control Rampur /Kotgarh Forest Division is not available.
1981-82	771320	3422372	-2651052	
1982-83	715312	4504952	-3789640	
1983-84	958965	5779942	-4820977	
1984-85	567253	3563522	-2996269	
G.Total	5420040	20800584	-15380544	

(Source: Working Plan of Seraj Forest Division by B.S.Yadav)

The main objectives of the plan were to create normal Forest with normal distribution of age classes in due course of time, and to satisfy the domestic and agricultural requirements of the local: right holders including those of fruit growers for the manufacturing of fruit packing boxes etc. Thus plan accorded the highest priority to exploitation of high lying Forest for earning of revenue rather than conservation of Forests.

During this plan period, 1980-81 to 1983-84, Shri R.P.Jaiswal's Working Plan for Seraj Forest Division was operative and for the period 1984-85, the control of Arsu, Chowai & Nither Range was under Rampur and Kotgarh Forest Division.

5.8. Seventh Five Year Plan (1985-90): The Seventh Plan laid stress on improving the productivity level of industries by upgrading of technology and to establish growth in areas of increasing economic productivity, production of food grains, and generating employment.

The basic approach to the Seventh Plan was also, sustainable development in harmony with the environment. Towards this end, it would have to be ensured that all development programmes, in all sectors, will take environmental considerations fully into account. Major activities in the area of environment work was initiated or stepped up during the Sixth Plan which included: water and air pollution monitoring and control; environmental impact assessment; natural living resource conservation; special projects on wildlife; ecological studies by the Botanical and Zoological Surveys of India; eco-development programmes; environmental research promotion; and environmental information, education, training and awareness.

As regards the policy perspective on Forest management, the seventh plan envisaged "Forest for survival" as its theme. The plan, giving highest priority to restore the Forest cover with 33% of the geographical area of the country being brought under Forests from the present level of about 23%: asserted for preserving biological diversity, increase the vegetal cover by massive Afforestation and development Afforestation into a people's movement (Social Forestry) enhance the productivity of existing Forest areas etc.

In 1988, a National Forest Policy was formulated with principle aim of ensuring environmental stability and maintenance of ecological balance. Since Forestry is a Concurrent List subject, a State Forest policy under the ambit of the National Forest Policy was enunciated by the Government of Himachal Pradesh in 1988. In terms of the Govt. policy decision the complete moratorium on green fellings, the silvicultural marking done upto 1984-85 were discontinued and only salvage marking were carried out. Thus prescription given in the Working Plan was not followed. The Afforestation programme under the social Forestry has failed to achieve its objectives of people's movement for Afforestation due to less public participation in this scheme.

The year wise revenue and expenditure of the Rampur Forest Division is tabulated in Table No.:- 5.7.

Table No. 5.7

Revenue and Expenditure of Rampur Forest Division during Seventh Five Year Plan

Year	Revenue (Rs.)	Expenditure (Rs.)	Surplus (Rs.)	Remarks
1985-86	5453378.6	10388961.34	-4935582.74	The revenue and expenditure for the year 1985-86 to 1989-90 has been taken from the record of Rampur Forest Division, since the data for the ranges of Anni Forest Division which was in the administrative control Rampur and KotgarhForest Division is not available.
1986-87	2015577.38	10737426.35	-8721848.97	
1987-88	1032147.51	12967287.92	-11935140.41	
1988-89	1972114	13989057	-12016943	
1989-90	Data Not Available			

(Source: Record of Rampur Forest Division)

5.9. Eighth Five Year Plan (1992-97):

1989–91 was a period of economic instability in India and hence no five year plan was implemented. Between 1990 and 1992, there were only Annual Plans. In 1991, India faced a crisis in foreign exchange (Forex) reserves. At that time India's free market reforms were launched that brought the nearly bankrupt nation back from the edge. It was the beginning of privatization and liberalization in India. The major objectives included, controlling population growth, poverty reduction, employment generation, strengthening the infrastructure, institutional building, tourism management, Human Resource Development, involvement of Panchayat Raj, Nagar Palikas, N.G.O'S and Decentralization and people's participation.

The plan calls for the necessity of statutory environmental impact assessment of all projects and activities before their implementation, as such would prevents environmental degradation by making it obligatory on the part of executing agencies to undertake compensatory measures.

A number of programmes of Afforestation were taken up to secure people's participation. Under this scheme, priority was given to:-

- Establishment of decentralized nurseries and school nurseries.
- Block plantations especially on community land and lands of SC/ST and people living below the poverty line.
- Pasture development through people's institutions and involvement and assistance in the implementation of the Tree Patta Schemes.

The scheme of decentralized people's nurseries was initiated in 1986-87 to encourage seedling production by farmers, especially small and marginal farmers to establish small, dispersed nurseries to cater to local needs of planting material and provide income generating activities to the beneficiaries.

An appraisal of the Afforestation schemes undertaken during the plan period has appeared some deficiencies. There has no specific plan of action for meeting fuel wood and fodder requirements except for the continuance of the scheme for rural fuel wood plantation, which does directly address these issues. Under the social Forestry programme, the efforts have been only on departmental mode. The rural poor and tribal's, who depend mostly on public and Forest lands for their livelihood, have at best, been given restricted access to the areas taken up for development.

The year-wise revenue and expenditure of the Rampur Forest Division is tabulated in table No: - 5.8.

Table 5.8

Revenue and Expenditure of Rampur Forest Division during Eighth Five Year Plan

Year	Revenue (Rs.)	Expenditure (Rs.)	Surplus (Rs.)
1992-93	2456308	19314381	-16858073
1993-94	5560788	15663314	-10102526
1994-95	5307715	18667066	-13359351
1995-96	Data Not Available		
1996-97	15596909	24590790	-8993881

(Source: - Records of Rampur Forest Division, Rampur)

During this period, the administrative control of the Ranges viz. Arsu & Chowai, Nither was under Rampur and Kotgarh Forest Division respectively. Fellings of trees as prescribed in Working Plan had not been done due to ban on green felling. Plantation as prescribed has been done under social Forestry scheme but results of planting are not encouraging because of lack of proper supervision and maintenance, non co-operation of local people and in effective closures and protection from biotic pressures. Almost, all plantation done up to 2000-01 were failure with few exceptions.

5.10 Ninth Five Year Plan (1997-2002):

The Ninth Five Year Plan was launched in the 50th year of India's Independence. The emphasis was given to the Integrated Watershed Approach. Since the smallest viable geographical unit is the watershed, it was therefore, imperative that the integrated watershed approach should be followed. The watershed is a geo-hydrological natural unit which has evolved through interaction of rain water with the topography. The measures such as conserving rain water, through treatment of drainage lines in the micro-watersheds and promoting in-situ moisture were proposed. This includes 3-tier appropriate vegetation consisting of grasses, shrubs and trees for fodder, fuel, timber and fruit in a tope sequence which is in consonance with soil depth and moisture.

The major environmental problems being faced by Hills are deforestation and soil erosion, which are leading to the drying up of water resources, flash flood, cloud bursts and decline in the yield of food and cash crops, fodder, fuel and other minor Forest produce. Besides water retention capacity and productivity of land have been adversely affected. Similarly, poverty in the hills, intensive human & live stock pressures along with encroachment on Forest land and indiscriminate felling of trees for commercial purposes in hill areas have already led to loss of soil and rapid depletion and destruction of Forest cover. Development activities like construction of buildings, roads, hydro power projects, large and medium industries and mining etc. have aggravated environmental problems. Consequently, perennial sources of water such as springs and small streams have dried up in many hills areas.

The Govt. of H.P. Constituted the Forest Corporation in 1974, the only agency responsible for the harvesting and exploitation of Forests, including resin extraction. Earlier, private contractors carried out all activities related to Forests.

The most valued Forest product in 2001-02 was timber, followed by medicinal plants and herbs and resin. The total Forest produce was worth Rs. 231.30 Crore. Until 1970, timber removal from the Forests was more than the annual prescribed yield, which was unsustainable. And since 1985, the annual removal from the Forest has always remained below the prescribed yield due to ban imposed by the Govt. on silvicultural operation and also under an order of the Supreme Court dated 12-12-1996.

The year-wise revenue and expenditure along with plantation activities of the erstwhile Rampur and present Anni Forest Division which came into being on 1st July, 1999 is tabulated in Table No: - 5.9 and 5.10

Table 5.9

Revenue and Expenditure of Rampur and Anni Forest Division during Ninth Five Year Plan

Year	Revenue (Rs.)	Expenditure (Rs.)	Surplus (Rs.)
1997-98	1522554	2935800	-1413246
1998-99	3354938	32383627	-29028689
1999-00	371708	15140566	-14768858
2000-01	266370	17306750	-17040380
2001-02	1075570	13697872	-12622302

(Source:- Records of Rampur Forest Division, Rampur for the year 1997-98 to 1998-99 and thereafter from the records Anni Forest Division for the year 1999-00 to 2001-02).

Table 5.10

Plantations raised during the year 1996-2000 in Rampur and Anni Forest Division

Year	Area planted in Arsu Range (hac.)	Area planted in Chowai Range (hac.)	Area planted in Nither Range (hac.)	Total (Hac.)
1997-98	Data not available			
1998-99				
1999-00	200	200	214	614
2000-01	122	150.4	120	392.4
2001-02	80	99	70.05	249.05
Total	402	449.4	404.05	1255.45

(Source: - Records of Anni Forest Division)

From the period, 1996-97 onwards, the working plan of Sh. Shamsher Singh Negi, IFS continued to be existed in this Division. Fellings of trees as prescribed in Working Plan had not been done due to ban on green felling in compliance of Hon'ble Supreme Court's order dated 12-12-1996. Thus no silvicultural operation as prescribed in the Working Plan had been carried out

due to ban on green felling and blanks/open areas were also not taken up planting/regeneration in planned way. Only plantation as prescribed had been done under various Departmental Scheme but results of planting are encouraging as compare to plantation have done during nineties. However, it needs improvement in plantation technique and management in planned way.

5.11. Tenth Five Year Plan (2002-2007):

The main aims of this plan was to attain 8% GDP growth per year, reduction of poverty, providing gainful and high-quality employment and reduction in gender gaps in literacy and wage rates. GDP growth in the post-reforms period has improved from an average of about 5-7% of the 1980 to an average of about 6.1% in the Eighth and Ninth Plan period, making India one of the ten fastest growing countries in the world.

The following initiatives were proposed in the Tenth Plan for improving the productivity of Forest plantation:-

- The plantation strategy should be based on creating new Forest resources that help reduce pressure on natural Forests and preferably reverse the negative impact of deforestation while meeting the increasing demand. India can benefit from the experience of other countries, which have developed policies and incentives to promote private sector participation in accelerating the pace of Afforestation.
- At present, the performance of Forest plantations in terms of survival, growth and yield is poor. The mean annual increment (MAI) of Forest plantations varies from about 2m³/ha/year for valuable timber species to about 5-8 m³/ha/year for eucalyptus and other fast growing species. This is far below the MAI of over 10m³ and about 50m³/ha/year for good quality plantations in different countries.
- The productivity and success of plantations can be improved by appropriate site selection, site species matching, planting of elite clones, proper maintenance and protection, timely tending, thinning, irrigation, application of manures and pesticides, etc.
- Reduction in harvesting and post harvesting losses should be achieved by adopting improved technologies.

Both Joint Forest Management Program and Sanjhi Van Yojna created mass awareness about Forestry but the focus was again on raising of plantation besides soil conservation works and entry point activities. The other compensatory Afforestation activities were also implemented with main emphasis on soil and water conservation.

Sh. Shamsher Singh Negi's Working Plan (1996-97 to 2011-12) continued to be existed and was in vogue in this Division. Fellings of trees as prescribed in Working Plan had not been done due to ban on green felling in compliance of Hon'ble Supreme Court's order dated 12-12-1996. Thus no silvicultural operation as prescribed in the Working Plan had been carried out due to ban on green felling. Only plantation as prescribed had been done under various Departmental Scheme.

The year-wise revenue and expenditure along with plantation activities of the Anni Forest Division is tabulated in the Table No: - 5.11and 5.12

Table 5.11

Revenue and Expenditure of Anni Forest Division during Tenth Five Year Plan

Year	Revenue (Rs.)	Expenditure (Rs.)	Surplus (Rs.)
2002-03	496458	16061474	-15565016
2003-04	527243	15373564	-14846321
2004-05	12623529	17189200	-4565671
2005-06	27220730	26548200	672530
2006-07	1212053	31827800	-30615747

(Source:-Records of Anni Forest Division)

Table 5.12

Plantations Raised during the year 2002-2007 in Anni Forest Division

Year	Area planted in Arsu Range (hac.)	Area planted in Chowai Range (hac.)	Area planted in Nither Range (hac.)	Total area planted (hac.)
2002-03	115	80	45	240
2003-04	85	61	71	217
2004-05	47	54.5	58.32	159.82
2005-06	188.25	200.6	174	562.85
2006-07	217.5	206	219.91	643.41
Total	652.75	602.1	568.23	1823.08

(Source: - Records of Anni Forest Division)

5.12 Eleventh Five Year Plan (2007-2012):

During the Eleventh Five Year Plan, India has entered with an impressive record of economic growth. After a lackluster performance in the Ninth Plan period (1997–98 to 2001–02), when gross domestic product (GDP) grew at only 5.5% per annum, the economy accelerated in the Tenth Plan period (2002–03 to 2006–07) to record an average growth of 7.7%, the highest in any Plan period so far. Besides, there was acceleration even within the Tenth Plan period and the growth rate in the last four years of the Plan has averaged 8.7%, making India one of the fastest growing economies in the world.

National Forest Policy 1988 acknowledged the importance and primacy of local communities and provided for a sustainable management approach with maintenance of environmental stability as the prime objective. Commitment to conservation of nature was highlighted by the targets of maintaining one-third of land under the Forest/tree cover.

The Integrated Forest Protection Scheme was redesigned to provide assistance to the states for building capacity and basic infrastructure for modern Forest management. Improving Management Planning and Survey (land records) set-up was the first priority for Central assistance. Modernization of the management planning (Working Plan) units with equipment, infrastructure, and manpower. This may include Forest inventories, training and satellite imagery processing, and GIS facilities. This included professional services such as ecologists and

sociologists for relevant inputs. The Scheduled Tribes and other Forest Dwellers (Recognition of Forest Rights) Act, 2006, was also one of the highlights and came operative during 11th Five Year Plan.

Sh. Shamsher Singh Negi's Working Plan (1996-97 to 2011-12) remained operative during this Five Year Plan in this Division. No green fellings took place during this period as a result of complete moratorium on green fellings and in compliance of the Supreme Court order dated 12-12-1996. The implementation of Rampur Hydro Electric Project CAT Plan has also started in this Division during the plan period. The year-wise revenue and expenditure along with plantation activities of the Rampur Forest Division is tabulated in the Table No: - 5.13 and 5.14

Table 5.13

Revenue and Expenditure of Anni Forest Division during Eleventh Five Year Plan

Year	Revenue (Rs.)	Expenditure (Rs.)	Surplus (Rs.)
2007-08	1312166	25258400	-23946234
2008-09	718598	33323400	-32604802
2009-10	1918612	37614163	-35695551
2010-11	817880	20178454	-19360574
2011-12	1905108	38789700	-36884592

(Source: - Records of Anni Forest Division)

Table 5.14

Plantations raised during the year 2007-2012 in Anni Forest Division

Year	Area planted in Arsu Range (hac.)	Area planted in Chowai Range (hac.)	Area planted in Nither Range (hac.)	Total area planted
2007-08	132	158	104	394
2008-09	108	128	107.2	343.2
2009-10	59	95	96	250
2010-11	78	117	117	312
2011-12	113	97.67	126.63	337.3
Total	490	595.67	550.83	1636.5

(Source: Records of Anni Forest Division)

5.13 Twelfth Five Year Plan (2012-2017)

The objectives of the Eleventh Plan were faster and inclusive growth and the initiatives taken in the Eleventh Plan period had resulted in substantial progress towards both objectives. Inevitably, there are some weaknesses that need to be addressed and new challenges that need to be placed.

Several issues have been flagged during the Planning Commission consultations with different stake holders which deal with land, mining, Forest and wild life management, climate change, waste management, reduction of pollution, conservation of Forests and biodiversity etc.

During this period, the Shamsheer Singh Negi's Working Plan (1996-97 to 2011-12) for the Forest of Anni Forest Division continued to be existed in this division and was further extended by Government of India, Ministry of Environment and Forests, Northern Regional Office No. 13-7(20)/2003-ROC Dated 3rd March 2014 up to 2014-15 and the revision work of Negi's Working Plan had also started during 2013. No green fellings took place during the intervening period as a result of complete moratorium on green fellings and in compliance of the Supreme Court order dated 12-12-1996. However, the incidence of Forest fire in the State has increased during this plan period and more area is burnt each year. Fire is a major factor that causes considerable damage to the Forests of this Division.

Both habitations pressure and invasive alien species constitute a threat to native bio diversity in both the terrestrial and adequate eco system. Fragmentation and degradation of wildlife habitats adversely affects the population of wild Animal species resulting in increased man Animal conflicts. The country has taken a pioneering step in formulation of Biodiversity Act, 2002 and Biodiversity Rules, 2004 assigning adequate importance to community conservation and management of bio-resources for the benefit of all stakeholders. This Act is very much in time with the International Convention and Protocol on Bio-diversity Conservation. Proper implementation of the Act at Gram Sabha level will be the important task for the Twelfth Five year Plan. The thirteenth Finance Commission has recommended grant-in-aid for Forests in H.P. as under:-

Table No. 5.15

Year	Amount in Lakhs
2016-17	2.872

The year-wise revenue and expenditure along with plantation activities of the Anni Forest Division is tabulated in the Table No: - 5.16 & 5.17.

Table No. 5.16

Revenue and Expenditure of Anni Forest Division during Twelfth Five Year Plan (2012-13 to 2016-17)

Year	Revenue (Rs.)	Expenditure (Rs.)	Surplus (Rs.)
2012-13	9561407	48801100	-39239693
2013-14	877120	54029600	-53152480
2014-15	4170373	53612252	-49441879
2015-16	1913807	52902351	-50988544
2016-17	1585154	58169314	-56584160

(Source: - Records of Anni Forest Division)

Table 5.17

Plantations raised during the year 2012-13 to 2019-20 Anni Forest Division

Year	Area planted in Arsu Range (hac.)	Area planted in Chowai Range (hac.)	Area planted in Nither Range (hac.)	Total area planted (hac.)
2012-13	65.95	54.404	145.8	266.154
2013-14	102	121.1	120	343.1
2014-15	78	40	117	235
2015-16	100	42	95.35	237.35
2016-17	70	73	95.77	238.77
2017-18	87.74	81.61	27.65	197
2018-19	62	47.77	38.5	148.27
2019-20	51	67.82	51.7	170.52
Total	616.69	527.704	691.77	1665.644

(Source: Records of Anni Forest Division)

5.14 NITI Aayog:

The Planning Commission of India supervised the five-year plan for the economic development of the country. However, in 2014, the 65-year-old Planning Commission was dissolved and a think tank – NITI Aayog (National Institution for Transforming India) took its place. It was established in 2015, by the NDA government, to replace the Planning Commission which followed a top-down model. It includes all the state Chief Ministers, along with the Chief Ministers of Delhi and Puducherry, the Lieutenant Governor of Andaman and Nicobar, and a vice chairman nominated by the Prime Minister. In addition, temporary members are selected from leading universities and research institutions. These members include a chief executive officer, four ex-official members and two part-time members. It doubled the current growth - developing self-sufficient cluster target growth of 8.5%.

5.14.1 On 29 May 2014, the Independent Evaluation Office submitted an assessment report to Prime Minister Narendra Modi with the recommendation to replace the Planning Commission with a "control commission." On 13 August 2014, the Union Cabinet scrapped the Planning Commission, to be replaced with a diluted version of the National Advisory Council (NAC) of India. On 1 January 2015, a Cabinet resolution was passed to replace the Planning Commission with the newly formed NITI Aayog (National Institution for Transforming India). The Union Government of India announced the formation of NITI Aayog on 1 January 2015. The first meeting of NITI Aayog was chaired by Narendra Modi on 8 February 2015.

The main objectives of the Aayog are:

- To evolve a shared vision of national development priorities, sectors and strategies with the active involvement of States in the light of national objectives.
- To foster cooperative federalism through structured support initiatives and mechanisms with the States on a continuous basis, recognizing that strong States make a strong nation.
- To develop mechanisms to formulate credible plans at the village level and aggregate these progressively at higher levels of government.

- To ensure, on areas that are specifically referred to it, that the interests of national security are incorporated in economic strategy and policy.
- To pay special attention to the sections of our society that may be at risk of not benefiting adequately from economic progress.
- To design strategic and long term policy and programme frameworks and initiatives, and monitor their progress and their efficacy. The lessons learnt through monitoring and feedback will be used for making innovative improvements, including necessary mid-course corrections.
- To provide advice and encourage partnerships between key stakeholders and national and international like-minded Think tanks, as well as educational and policy research institutions.
- To create a knowledge, innovation and entrepreneurial support system through a collaborative community of national and international experts, practitioners and other partners.
- To offer a platform for resolution of inter-sect oral and inter departmental issues in order to accelerate the implementation of the development agenda.
- To maintain a state-of-the-art Resource Centre, be a repository of research on good governance and best practices in sustainable and equitable development as well as help their dissemination to stake-holders.
- To actively monitor and evaluate the implementation of programmes and initiatives, including the identification of the needed resources so as to strengthen the probability of success and scope of delivery.
- To focus on technology upgradation and capacity building for implementation of programmes and initiatives.
- To undertake other activities as may be necessary in order to further the execution of the national development agenda, and the objectives mentioned in above.

CHAPTER VI

STAFF AND LABOUR SUPPLY

6.1 Staff:

The staff position of Anni Forest Division as it stood on 30-09-2020 under various categories is tabulated in table No. 6.1

Table-6.1

Staff position of Anni Forest Division as on 30-09-2020

Sr. No.	Category	Sanctioned strength	Existing strength	Variation
1.	HPFS	2	1	(-)1
3.	Forest Ranger	5	3	(-) 2
4.	Dy. Ranger	12	9	(-) 3
5.	Forest Guards	52	51	(-) 1
6.	SupdtGr.II	1	1	-
7.	Sr. Assistants	2	1	(-) 1
8.	Jr. Asstt/Clerks/JOA	5	4	(-) 1
9.	Kanungo	0	0	-
10.	Peon	13	13	-
11.	Chowkidar	12	10	(-)2
12.	Mali	4	2	(-) 2
13.	Dandidar	1	0	(-) 1
14.	Sweeper	0	0	-
15.	Forest Worker	42	18	(-) 24
16.	Electrician	0	0	-
17.	Dak runner	1	1	(-)1
18.	Driver	1	0	(-)1
19.	Syce	1	1	-

There has been no increase in staff strength as warranted by increase of work load and charge of public attitude with time.

6.2 Executive Charges:

This division consists of three territorial Ranges viz Arsu, Chowai Nither. List of Divisional Forest Officers who has held the charge of Divisional Forest Office Anni is tabulated in table No.:- 6.2

Table-6.2

List of DFOs who held the charge of Anni Forest Division			
Sr. No.	Name of DFOs	Period	
		From	To

1.	Sh.Cherring Angroop, HPFS	23-07-1999	31-03-2000
2.	Sh.P.L.Chauhan, IFS	1-04-2000	4-06-2000
3.	Sh.P.S.PathAnnia, HPFS	5-06-2000	31-05-2002
4.	Sh.R.R.Bhalaik, HPFS	10-06-2002	21-08-2004
5.	Sh.Yogesh Verma, HPFS	21-08-2004	31-10-2007
6.	Sh.C.M.Sharma, HPFS	3-10-2007	12-04-2010
7.	Sh.V.K.Aggarwal, HPFS	13-04-2010	12-05-2010
8.	Sh.R.K.Bhalla, HPFS	13-05-2010	26-05-2011
9.	Sh.V.K.Aggarwal, HPFS	27-05-2011	16-05-2012
10.	Sh.R.K.Bhalla, HPFS	11-05-2-12	25-04-2015
11.	Sh.V.K.Aggarwal, HPFS	21-04-2015	14-06-2018
12.	Sh.Chander Bhushan, HPFS	15-06-2018	12.11.2020
13.	K.B. Negi, HPFS	04.11.2020	01-12-2021
14.	Dr. Chaman Lal, HPFS	01-12-2021	

The list of Administrative Ranges, Blocks and Beats in Anni Forest Division is given in **Appendix No. XLV**.

6.3 Labour supply:

Generally adequate local labour is available in the tract for various Forestry operations like raising of nurseries, plantation, cultural operation, enumerations, marking, repair of boundary pillars, construction and repair of buildings, roads and paths etc. Slight scarcity is felt during monsoon planting season i.e. in July and August which coincides with the apple and vegetable harvest season. Gorkha labour from Nepal is also available for different departmental works. The Forest Corporation also engages labour locally for resin extraction and timber exploitation. But the H.P.S.F.D.C. is mostly relying on imported labour from Mandi, Kangra, Nepal and U.P. areas. The daily wagers are also being regularized as per Govt. policy for time to time. In Anni Forest Division, nearly 2 numbers of daily wagers are working regularly in the division for whom the work is being provided. Nearly 300 to 500 other persons are also employed annually as casual labour during seasonal Forestry works.

The work achieved in one man day i.e. work done by an adult laborer in one working day for eight hours is tabulated in table No:-6.3

Table-6.3

Sr. No.	Name of Work	Quantity of Work
1.	Soil working picking 15 cms deep, digging trench 30 cms deep breaking clods and pilling earth from trench over the 15 cms poked line forming a ridge and furrow for very hard soil.	7.08 cum
2.	Soil working patches worked at 30 cms deep clods broken	4.81 cum
3.	Pit making 30x30x30 cms size	2.40 cum
4.	Digging over completely to 30 cms deep (after this to make the dug up spill into actual beds needs about 150 laborer to do one hac. in one day)	2.97 cum
5.	Broad cast sowing in the nursery	372 sq.M
6.	Weeding in nursery (1st and rain weeding)	93 sq.M
7.	Weeding in nursery (2 nd and rain weeding)	57.6 sq.M
8.	Making root-shoot cuttings	400 Nos.
9.	Planting cutting includes making and transport over 2.5 Kms.	80 Nos.
10.	Weeding in patches in plantation weeding- 1st weeding	30.6 sq.M
11.	Weeding in patches in plantation weeding- 2 nd weeding	22.37 sq.M
12.	Grass cutting in March (Variable)	278.07 sq.M
13.	Cillingi.e. cutting grass in patches around plants.	278.07 sq.M

(Source: As per Forester's companion)

6.4.1 In the changed scenario (JFM, PRA techniques, etc), there is the need for imparting specialized skills to the field staff in view of the changing trends may also be discussed.

Forestry works were also coming under the ambit of MGNREGA wherein work was being executed by employing the job card holders. But in the recent years, the MGNREGA works are not being allotted to the Forest Department. The trend of executing the major works like construction of Roads, Paths, Buildings and Soil conservation works on Muster roll basis has now been dispensed with and these works are being executed by inviting Tenders. However, the Forestry works like rising of plantation, nurseries are being executed by engaging local labour departmentally.

6.4 Labour rates:

The wage rates of labour have been increased many folds. The daily wage rate for normal unskilled labour was Rs. 20 per day during 1990 which is now Rs.275/- per day (April, 2020). The Conservator of Forests, Rampur Circle fixes the labour rate for Rampur Circle but the Schedule of Labour Rates for Rampur Circle has now been revised since 2012-13. The past and present rate of daily waged unskilled labour is tabulated in Table No: - 6.4

Table-6.4

Sr. No.	Category of daily labour	Rates per Day (Rs)	
		Past	Present
1	2	3	4
1.	Un-skilled	120	130
2.	Quarry man (Khangir)	120	130
3.	Driller (for Air Pump)	120	130
4.	Sprayman	120	130
5.	Carpenter Ist class	218	235

1	2	3	4
6.	Carpenter 2 nd class	162	178
7.	Mason Ist class	218	235
8.	Mason Iind class /Stone Chisler	162	178
9.	Painter Ist Class/distemperer	162	178
10.	Painter Iind Class/White washer	132	143
11.	Blacksmith	153	166
12.	Plumber Ist Class	153	166
13.	Plumber Iind Class	128	140
14.	Bar binder	132	143
15.	Sawmiller	152	166
16.	Assistant Sawmiller	120	130
17.	Cleaner	120	130
18.	Electrician Ist Class (I.T.I.)	192	208
19.	Electrician 2 nd Class	152	166
20.	Surveyor	192	208
21.	Driver	162	178
22.	Feller (Girani)	120	130
23.	Logger	120	130
24.	Sawyer (Charani)	120	130
25.	Dresser (Pachhani)	120	130
26.	Chowkidar (Office, Depot, Nursery etc)	120	130
27.	Khalasi, Zoo Annimal Attendant/Fire Watcher/Grinder forch flooring/ Mate/ Calliperman/Mali, Sweeper/ Enumerator/ Enclosure sweeper	120	130

(Source: As per schedule of work and labour rates for Rampur Circle for the year 2012-13)

6.4.2 Labour for resin extraction operations: The extraction of resin from the Forest is under the control of HP State Forest Development Corporation Ltd. and they allot the works to the labour supply mates on their schedule of rates for various applications or sometimes invite tenders.

CHAPTER - VII

PAST SYSTEM OF MANAGEMENT

7.1 General History of the Forests:

Prior to 1886 the Forests of the tract were worked in an unscientific manner. There were no definite schemes for exploitation or carrying out of the works of reproduction etc. During this period only species of value for export was Deodar only and the traders used to remove a certain number of selected Deodar trees from the Forests. The Govt. of Punjab undertook the departmental felling for the first time in 1864-65. In the absence of proper working plan, all that was done to make time to time the rough estimation about the Deodar trees available for export. Regarding the extent of felling no proper record were maintained. The method of working whether for Govt. purposes or use of right holders was all together haphazard.

7.1.1 15084 number of Deodar trees were marked and felled for export, probably of IST class trees i.e. 1864-65 to 1896-97. Besides the considerable number of wind fallen trees were also converted and exported. In addition 7511 Deodar trees probably of IST class were felled from Govt. land for local use w.e.f. 1864-65 to 1896-97. Thereby bringing the removal to 22595 IST class Deodar trees.

7.1.2 There used to be one working plan for whole of Kullu District in the past, till the Fifth working plan prepared by D.P. Kapoor IFS (1964-65 to 1978-79) for the Forests of Seraj Forest Division and separate Working Plan was also prepared for Kullu Forest Division comprising (Kullu and Parvati Forest Division). Sh. D.P. Kapoor prepared/completed the draft plan and submitted the proposal in 1972-73. The draft plan, however, could not be approved. However, the Forests of Seraj Forest Division were worked under the prescription of Kapoor's Plan but the yield was controlled under Aggarwala's Plan. There was no Working Plan for Seraj Forest Division for the period 1979-80 to 1985-86 and works were executed on the basis of felling programmes approved by CCF from time to time. During that period, no major felling was carried out except some thinnings and felling of Fir Forests for the supply of fruit packing cases etc. and also to meet the local demands of Right Holders for Timber Distribution (TD). In the mean time, the control of two Ranges of Seraj Division (viz. Kurpan and Anni) came under the administrative control of Rampur Circle in Rampur and Kotgarh Forest Division. Later on, Nither Range was carved out in 01.06.1984, from erstwhile Kurpan and Anni Ranges by transferring Nither, Margi Block of Kurpan Range and Dalash Block, Tandi Beat of Anni Range respectively. After that separate working plan was prepared for the Forests of Outer Seraj by Sh. Shamsher Singh Negi, IFS for the period 1996-97 to 2011-12 (i.e. for the Satluj felling series of erstwhile Seraj Forest Division).

7.2 The First Working Plan by Sir C.P. Fisher (1897-98 to 1918-19):

The first attempt to manage the Forests of the tract on scientific lines was made in 1894 when Sir C.P. Fisher, Deputy Conservator of Forests, undertook the preparation of First Plan between 1894-97. It was sanctioned by Punjab Government vide their letter No. 367 dated 05.09.1998. The value was only given to Deodars which was considered the valuable species for export. While other species were considered inferior; their felling was considered only with reference to Right Holders demands. An attempt was made to calculate annual yield of these trees in every Forest to meet the demand of Right Holders. These calculation naturally assumed that normal reproduction would follow the selection fellings whereas in fact such reproduction was frequently not obtained and consequently the calculation became entirely erroneous.

Deodar yield calculation was done separately for each Range and working circle. The annual yield was fixed at 1800 by the number of 'I' Class (50 cm and over dia) trees for export and 300 'I' Class tree for local use. At the close of 1917-18, i.e. 21 years, total 36004 No's of 'I' Class trees of Deodar trees were felled against the prescription of the plan as far as fellings are concerned. However, the prescriptions that the certain parts of mixed Forest should be converted into Deodar while remaining portions of these Forest should be maintained poorly for production of inferior trees was not generally followed. On the contrary, considerable attention was paid to the improvement felling and thinning which resulted in establishing the fairly large area of complete even aged crop of young Deodar and Kail but as elsewhere older crop where selection felling was carried out with an idea of obtaining natural regeneration. The results were highly disappointing and far below the anticipation of Working Plan Officer. Many of the Forest were left in a deplorable condition.

7.2.1 The reasons of failure were plain and simple. None of the essential operations such as cleaning of the felled debris, closure against grazing and tending of young regeneration could be undertaken because for all intents and purposes, the whole area of the Division was under regeneration at one and the same time and it was impossible to devote regular attention. Another reason which militated against the success of selection system was the fact that whole area of the Division was open to grazing of the cattle, sheep, goats and the collection of leaf mould. Highly cumbersome and laborious procedure was required to be followed for obtaining sanction of the Govt. for closure and notifying the same in the official Gazette. Every closure proposed was generally objected to by the people and thus necessitated enquires by various authorities and a long period elapsed before the matter could be finalized. The result has been that a very few areas could be closed at the grazing destroyed most of the regeneration which might have been expected from the selection felling.

7.3 The Second Working Plan by Sir E.G. Trevor (1919-20 to 1934-35):

The revision work was carried out during the year 1915 to 1919 by Sir. E.G. Trevor and the plan came into operation during the 1919-20. Prior to 1919 Trevor remained as DFO Kullu (covering the Kullu District) for about 9 years and his plan was the result of careful prolonged study. He knows it well that the regeneration under Fisher's plan had largely failed because most of the areas worked being heavily grazed. Therefore, he embraced in his working plan, a closure scheme, approved by civil enquiry. In his plan he included all Forests except the most precipitous, in the working circles to be managed under uniform system so that definite area of the Forests could be closed and regenerated within the stipulated period. The areas selected for regeneration were so chosen that minimum possible hardship was caused to the people living in the vicinity of the Forests and due regard was given to needs and rights of the villagers. Working circle were formed as under-

7.3.1 The Regular Working Circle: This consisted of all the Deodar, Kail, Chil and Oak Forests which were located on ground, easy to be worked under the Uniform System. The rotation of 120 year was adopted with four periodic blocks. The period of PBI was reduced from 30 years to 25 years on the consideration that a good deal of regeneration existed in this Block and it was considered desirable to complete it as early as possible. The Yield was calculated on the basis of total enumeration carried out down to 30 cm dia meter in the Blocks Plus half of the increment divided by 25 years. This yield came into 55158.32 M3 and of this approximately Deodar was 13%, Kail 20%, Fir 64% and Chil 3% by the end of 1933-34 i.e. after the expiry the plan period there was heavy deficit under all the species i.e. Deodar 39%, Kail 61%, Fir 37% and Chil 31%. The reasons for this deficit were as under:-

- Heavy fire in PBI area during 1921-22.

- Retention of immature growing stock.
- Non availability of increment put up by III Class trees.
- Deodar and Kail available in Fir area were not worked.
- Working Fir area was not un economical.
- Only light selection felling was possible on precipitous area of PBI.
- Felling of Kail in remote Forest was also uneconomical during second half period.
- Extraction was done only in the form of sleeper which were available from I and II Class trees and reaming III Class trees were unfelled

The results of the plan so far as the silvicultural aspect was concerned, were excellent in restocking of Deodar and Kail area of Regular Working circle especially the more accessible ones, whereas it was some but backward in fire damaged area by the fire of the 1921-22 and upper part of the compartment which contained high proportion of Fir. Some good works burgens in these area firs could be disposed of and these now contained valuable mixed crop. In general, it may be noted that a great proportion of regeneration was obtained through artificial regeneration in this working circle; no doubt subsequently a fair amount of regeneration came in naturally. Kail filed up the intervening blanks and to avoid Deodar being to Forest had to be frequently cut. Later on in the upper reaches of some Forests both spruce and Fir was successfully raised by sowing and planting though on limited Scale. Subsequently both these species came up naturally as result of removal of humus and protection of afforded to tend the Deodar. As regards thinning these were generally satisfactory, more particularly in Deodar crops and in Kail area which were near to habitation and were easy for exploitation and largely in demand by Right Holders. In Kail, the tendency generally was to remove bigger poles by reducing the average crop dia meter largely because the smaller poll uneconomical to exploited where heavy falling were prescribed were carried out thoroughly and with great benefit to the younger crops.

7.3.2 Fir Working Circle: This consisted of all the pure Fir and Spruce Forests which were consider suitable for working under the Uniform System. Protestation of 150 years with five periodic blocks of 30 year was adopted. Annual yield of 65286.70M³ was arrived at but little could be achieved for the lack of proper market. Departmental fellings work carried out in relatively easy areas for production of B.G. Sleepers on a very limited scale or experimental regeneration fellings. The deficit ran as high as 97%. In certain Forest of this circle near the villages which held an open crop at the commencement of the plan, received further fellings is little resultant regeneration. Little was done to regenerate these areas because they had been worked nearly for the Right Holders. It was too much to expect regeneration to come up without effective closure even in places, where humus accumulation was light, due to heavy grazing. To regenerate Fir area absolute closure to grazing by sheep and goat is necessary even in the more distant Forest where Annimal halt for a few days on their way to and back higher grazing grounds.

7.3.3 The Selection Working Circle: This included Forests of Deodar pine and Fir where the application of any regular method of treatment was impossible due to configuration of ground but could be work for export. Rotation of 120 Years was adopted and it was anticipated that this would produce 70 cm Diameter in the Regular Working Circle. The yield was calculated only for Deodar according to Hufnagl's Formula for which purpose volume of diameter classes of half rotation age and over was taken to be equal to total stock counted, as 30 cm diameter was attained in 57 Years according to data collected. Annual yield thus came to 128922cm³ annually, which was recognized more than the double the current annual increment of the growing stock above 30cm diameter and over, but the yield was permissible because of large excess of over mature stock of which earlier removal was considered expedient since it was producing inadequate increment. Upton the end of the 1933-34, Deodar yield was 38% deficit. The reason for this deficit was that felling was concentrated in the Regular Working Circle in the beginning. Also remote areas with large proportion of Fir and areas having lower diameter classes were not felled. In

addition portion of this Circle was severely damaged by fire during 1921-22. Although yield was deficit by 38%, yet the area was over felled due to over assessment of yield and removal of over matured trees in place of 2nd class and 3rd class.

Hufnagl's Formula presumes existence of normal distribution of all aged gradation which is highly incorrect in case of Kullu Valley. The younger age classes were deficient. Even the 2nd class's trees from which I Class trees are recruited were hopelessly deficient and constituted less than one sixth of the volume of I Class trees. In spite of above revelation, the yield of Deodar prescribed 30 Years, counted for 82% of total volume of I Class Deodar. The yield prescribed trees down to 30 cm diameter where in selection Forest trees below 60 cm dia are removed only when dead or die or in strict silvicultural thinning. This implied that in actual practice, the yield based on 2nd class to 3rd class trees was also obtained from I Class trees which obviously lead to over felling. All these factors resulted in the depletion of the mature growing stock of these Forests. On the other hand, regeneration did not come up adequately and advanced satisfactory so as to allow removal of remaining over wood for many years to come.

7.3.4 The Unregulated Working Circle: This included all other Demarcated Protected Forest area considered too remove work for export.

7.4 The Third Working Plan by Mr. W.H.G Samler (1934-35 to 1949-50):

Mr. W.H.G Samler took up the revision of Trevor's plan from 1931 to 1934. His plan came up in operation from 1-4-1934 and was merely a continuation of Trevor's plan and the objects of management were stated to be continuation of Second Plan. The same four working circle, constituted earlier, were kept, except that a considerable area containing pure or predominantly Fir of the Regular Working Circle, was transferred to the Fir Working Circle and some of the very steep and precipitous areas were allotted to Selection Working Circle.

7.4.1 The Regular Working Circle: Rotation was increased from 120 years to 150 years, and 5 periodic books each of 30 years were constituted. Increment was excluded from yield calculations. Preparatory felling was prescribed in PB-II and the yield was combined with the yield obtained from PB-I and PB-V. There was no justification for this, especially since both were regenerated in two different periods. While PB-I was being regenerated, PB-II was to be treated in almost the same manner as the rest of the intermediate blocks. Prescription of PB-II felling was most unfortunate as it led to heavy removals and reduction if yields in the next 30 years, when these Forests passed on to PB-I. The annual deviation figures showing excess and deficit from the prescription of the Plan for the period 1934-35 to 1947-48, for Satluj Felling Series against annual prescription for each type of yield under the Third Plan. These figures/removals are consolidated for the whole working circle as under:-

Table No. 7.1

Species	Annual Prescription (M ³)	Excess or Deficit(M ³)	Remarks
Deodar(in cum)	1359	(-) 2799	2 years yield in deficit.
Kail (in cum.)	793	(+) 11548	5 years yield in excess.
Chil (in cum.)	595	(+) 5740	5 years yield in excess.

The yield from intermediate block was divided into final and intermediate yield. Former consisting of all trees 60 cm and over in diameter and later 2nd class 40-60 cm diameter trees. For the reasons already explained, yield was actually over assessed in the plan and when much more than this is felled, it should be obvious that it must jeopardize future yield very considerably. Then

came the World War II called for enormous demand for timber. Every effort was made to produce increased quantities of timber and was counting as an effort directed towards winning war. Working Plan programmes, estimates and system were upset. All the work was done under practically independent triennial felling programme. At the end of Trevor's Plan, fellings were largely in deficit, but at the end of Samler's Plan, in 1947-48, the felling in case of Kail and Chil were very considerably in excess. Fortunately fellings of Deodar were in deficit. The result of excess felling has been the opening of intermediate Block and over working of easily assessable Forests in comparison to other areas. Even the young pole woods in PB-I and PB-V were not spared in later years of war.

7.4.2 Fir Working Circle: Rotation was kept at 150 years. No enumerations were carried out except for a few a PB-I areas. It was presumed that the Forests of this Circle would mostly remain in reserve. The other Forests allotted to this Circle were not even prescribed or inspected. Yield was calculated on Trevor's Enumerations. In PB-I, increment was excluded and yield was based on trees 60 cm and over in diameter. To begin with, felling were in deficit but was completely change the picture.

The demand of Timber became enormous. The deficit was not only wiped but at the end of war, the fellings excess stood at a litter over Six Years and at the end 1947-48, it was approximately 9 Years. 2/19 Madrow of Arsu Range was heavily worked. The deviation from annual description for the Fir Working Circle, at the end of the Years 1947-48 was (+) 19734 M³.

When it is remembered that regeneration has not advanced and the Forests were under stocked with a deficiency of younger age classes, it should be obvious that even if the assessed yield was correct and most of it has already been removed and consequently future yield has been seriously jeopardized. In this connection, it may be brought out that felling during war were not confined to PB-I, but were frequently carried out in other areas which were convenient for exploitation. The fellings in these areas did not differ in the least, intensity from those undertaken in PB-II areas. There was a great demand for Maple and Walnut trees for Rifle and Gun half wrought. In all 21 Maple and 13 Walnut trees were extracted from Seraj Division owing to the difficulties in extraction 1942-43 to 1947-48. A large number, however, was extracted from Kullu Forest Division. However, this record is incomplete and hence many trees appeared to have been removed. Similarly, the trees of other Broad Leaves are also not complete. During the Plan period, Fir Forests remained neglected. No sustained efforts were made to regenerate the except in some experimental plots where systematic cultural works were carried out by Research Division.

7.4.3 The Selection Working Circle: No enumerations were carried out in this working circle also except in Forests which were prescribed for fellings during the Plan Period. These Forests were not even enumerated during the Trevor's Plan. The rotation was raised from 120-150 Years and it was admitted that the growth in this Forests was much slow; the annual yield for Deodar was fixed three times excess the annual increment. Comparatively easier areas were exploited where cost of extraction was low leaving the difficult and remote areas untouched. However, good work was done in fire burnt areas prescribed for concentrated cultural works in Third Plan. Natural regeneration had also come up on broken ground where the pressure of grazing was not heavy and weed growth was not problem. The yield in this Working Circle was over assessed.

7.4.4 Fellings in Undemarcated Protected Forests: Heavy fellings were done in 3rd Class Forests also to meet the demand of war ignoring the demands of Right Holders and the prescription of Plan. Removals from these Forests are tabulated as under:-

Table No. 7.2

Species	No. of scantlings	Vol. in M ³
Deodar	101789	6166
Kail	232503	16177
Chil	35763	2682
Fir	53708	4414
Total	423763	29439

7.4.5 Special works of Improvement undertaken: During the Plan of Trevor, the construction works of road and buildings progressed well and Samler in his Plan prescribed few roads and buildings i.e. some of the Forest Gurad Huts, Rest House and Tarala in Anni Range was also prescribed. But some buildings which were not prescribed in the earlier Plan were also added. Forester's Quarter at Arsu and Chowai were constructed at the cost of Rs. 2045. Range Rest House at Bandal was reconstructed in 1947-48 at a cost of Rs. 2400. In case of paths, the most important one constructed during the Plan period was Tarala-Margi-Shilla Path at a cost of Rs. 6408. One room resthouse at Kharga and Sarga were constructed at the cost of Rs. 500 each upto 1941-42. DFO Hut at Dimajan and Samatan has been allowed to become unserviceable though it was an important one for the inspection of PB-I areas in Shilli- Girchi.

7.5 The Fourth Working Plan by Sh. K.L. Aggarwal (1949-50 to 1963-64):

Shri K.L. Aggarwal started revision work between 1947- 49 and his plan came into operation from 1st April, 1949. The following four working circles were constituted:

7.5.1 Regular Working circle: - This comprised the valuable and important, easily accessible, Deodar/ Kail Forest, with some Fir and Spruce located in the upper reaches and little Chil in the lower parts of Sainj and Tirthan Valley. The constitution of this Working Circle remained almost same as in the previous Working Plan except for the transfer of very steep and precipitous areas to the Selection Working Circle and compact and reasonably large portion containing predominantly Fir to the Fir Working Circle. The Forests of Working Circle are mainly Deodar and Kail. Complete enumerations down to 20 cm diameter in 10 cm diameter classes were carried out. Stock maps on 4"-1 Mile scale showing different species were prepared for all the compartment and areas under different species calculated. The rotation was fixed at 150 Years with an exploitable diameter 60 cm DBH OB. The Silvicultural shelterwood system which provided felling according to the nature of ground and permitted certain amount of irregularity in the canopy so as to avoid sacrifice of immature polewood. Retention of compact groups of pole as part of future crop and Selection fellings on steep ground were prescribed.

7.5.1.1 Division into period blocks: Five periods of 30 years each of which PB-I, II & V were definitely allotted while remaining two PBs were grouped as PB Inter. This period of 30 Years considered as suitable silviculturally as well as legally.

Calculation of yield from PB-I: The yield estimates were based on filed observations by evolving a constant indicating the percentage of volume of each species available, keeping allowance for compact group of poles to be retained as advance growth or trees allowed to stand in blanks where regeneration has not established or on broken ground where entire over wood cannot be removed for silvicultural reasons. The yield from PB-I was calculated according to the following Formula:

$$Y = \frac{C_1 V_1 + C_2 V_2}{P}$$

P

V1= Volume of Ist class trees standing in PBI
V2= Volume of II class trees standing in PBI

P= Period of Plan i.e. 30 years.

C1 and C2 are the constants. The volume of C2 was estimated at 0.3 for Deodar and 0.5 for Kail, Chil and Fir.

Yield from PB-V: It was considered advisable to leave only such proportion of over wood as can stand without suppressing the regeneration. It was estimated that 50% of the I Class and 2nd class trees otherwise available silviculturally should be removed in the interest of young crop during the first fifteen years of the Plan. Field inspection revealed that all the trees were not available. The value of C1 was estimated as 0.9 for Kail & Chil in case of I Class trees and 0.8 for Deodar. As regard 2nd class trees, the value of C2 was estimated 0.3 for Deodar and 0.5 for Kail, Spruce & Fir. The yield was calculated according to the Formula:

$$Y = \frac{1}{2} \frac{(C1V2 + C2V2)}{P} \quad \text{Where P is 15 years.}$$

Yield from PB Inter: The yield from PB Inter was divided into two categories:

- **Final yield from PB Inter:** The yield from over mature stock i.e. IB and over was designated as final yield and was calculated by volume. It was estimated that 40% of over mature trees of Deodar and Chil, and 60% of Kail & Fir would be available for felling during the Plan period.
- **Intermediate yield from PB Inter:** There was no volume control of yield from thinning which were to be carried out under strict silvicultural system. It was controlled by area.

7.5.1.2 The prescribed yield: The following annual yield was prescribed from PB-I, PB-V and PB Inter for Satluj Felling Series forming the part of present Outer Seraj tract of Seraj Forest Division.

Table No. 7.3

Species	PB-I (in M ³)	PB-V(in M ³)	PB-Inter(in M ³)	Total(in M ³)
Deodar	509.69	226.53	141.58	877.8
Kail	339.79	141.58	28.31	509.68
Chil	141.58	113.26	0	254.84
Fir	226.53	311.48	28.31	566.32
BL	0	0	0	0
Total	1217.59	792.85	198.2	2208.64

No removal were prescribed to be made from PB-II to safe guard the future yield except for the removal dead, dry and uprooted trees.

7.5.1.3 Control of yield: All the I and II class trees from PB-Inter were counted towards the yield. No felling for export was prescribed in PB-II. However, all the trees removed under grants to the Right Holders and removal of all the Salvage trees were counted towards the yield.

7.5.1.4 Results of Management: In general, the prescriptions were carried out. No attention was given to subsidiary silvicultural operations and other works. The position in each PB is given as under:

An area of 749.20 Ha was allotted to this periodic block. Out of this 597.8 Ha of Forest was prescribed for seeding felling during the first 15 Years of the Plan. The Forest was to be felled after the approval of the three years felling programme by the Conservator of Forests. All the areas were prescribed for felling during the fifteen years ending 31.03.1964. Regeneration operations were to be carried out in all Forests after felling. Out of this 210.43 Ha were totally regenerated by 1964 and were ready for transfer to PB-V.

PB-II: No fellings were prescribed for this PB but occasional TD was granted from these Forests.

PB-Inter: The Forest under this PB was prescribed during the Plan period. These Forests were however, subjected to heavy TD grants and the Forest depleted in thinning were undertaken wherever found necessary.

PB-V: The young crop in this PB were tended properly and the over wood was removed as prescribed. The following is the position of deviation as on 31.03.1964. The data regarding deviation statement and opening balance of this working circle has been collected from the revised Working Plan for Seraj Forest Division written by Sh. R.P. Jaiswal (1986-87 to 2001-02).

Name of Working Circle: Regular Working Circle

Table No. 7.4

PB	Spp.	Annual yield prescribed (M³)	Deviation as on 31.03.1964
PB –I	Deodar	622.98	(-) 3503.42
	Kail	651.30	(-) 835.92
	Chil	28.31	(-) 352.69
	Fir	1047.74	(-) 1499.40
PB-V	Deodar	538.03	(-) 1938.04
	Kail	453.07	(-) 688.82
	Chil	56.63	(-) 440.05
	Fir	311.49	(-) 2017.33
PB-Inter	Deodar	169.90	(-) 1018.85
	Kail	254.85	(-) 1528.43
	Chil	28.31	(-) 316.44
	Fir	81.39	(-) 5696.60
Total	Deodar	1330.91	(-) 4422.60
	Kail	1359.22	(-) 1528.43
	Chil	113.25	(-) 1109.19
	Fir	1440.62	(-) 9213.34

In case of thinning under PB- Inter and controlled by area, the following was the position:

Table No. 7.5

Period	Total Prescribed		Annual Area (Acres/Ha)		Position as on 31.03.1964	
	Acres	Ha	Acres	Ha	Acres	Ha
1954-55 to 1964-65	5759	2330.63	576	233.10	(-)1672	676.65

The position of regeneration operations in PB-I area under artificial regeneration was not satisfactory.

7.5.2 Fir Working Circle: The Forest which predominantly contained Silver Fir and Spruce and were considered for suitable for working under shelter wood system allotted to this Working Circle. This Working Circle contained Forests on comparatively on easy slopes containing mainly Fir and Spruce trees. Enumeration was carried out down to 20 cm DBH in all the Forest of this Working Circle. Location was fixed at 180 Years and exploitable diameter was kept 70 cm.

7.5.2.1 Silvicultural System: The Forests allotted to this Working Circle were managed under Punjab Irregular Shelter wood system. Healthy patches of advance growth of any extent and size was prescribed to retain as part of future crop.

7.5.2.2 Choice of species: Fir and Spruce were the choice of species for this Working Circle, although introduction of Deodar and Kail on South-Western slopes of the Forests at suitable elevation were contemplated.

7.5.2.3 Division into period blocks: Six periodic blocks were recognized with 30 Years period for each. PB-I earmarked in the field and rest all the PBs was grouped as PB others.

Calculation of Yield: During the 1st Fifteen Years, 4% of the volume of I Class trees was expected as final yield from PB-I areas as no regular seeding felling was expected on account of the fact that Forests were already opened in the past.

Yield from PB others: 30% of the stock of the trees, 1C & 1D were expected as final yield from this PB.

Prescribed final yield:

Table No. 7.6

PB - I(M ³)	PB Others(M ³)	Total for FWC(M ³)
877.81	821.18	1698.99

Control of Yield: All the I Class trees were counted towards the yield. Deviation at the end of Fifteen Years Period was prescribed as 10%.

7.5.2.4 Results of Management: The following was the position of the deviation at the end of 31-03-1964:

Table No. 7.7

Name of Working Circle	PBs	Annual Prescribed Yield(M ³)	Deviation as on 31.03.1964
Fir Working Circle	PB-I	877.81	Shown at Para 7.5.1.4
	PB Others	821.18	

All the Forests were said to be similar in nature in so far as the distribution of species and age classes are concerned. There was not Forest which could be allotted to PB-IV (Last) because no area could be regenerated after felling under PB-I. It will be clear from the position of the deviation that a huge excess felling was carried out and the felling prescribed from PB Others

were most disastrous because it allowed access to those Forests for felling which ultimately opened large gaps in the Forests inviting weeds and without any regeneration. This felling was also carried out to meet the demand of local Saw Miller for manufacturing of Fruit Packing Cases.

7.5.3 Selection Working Circle: This Irregular mixed Forests of Deodar, Kail & Fir on steep and broken ground were allotted to this Working Circle. In these Forests, the system of concentrated regeneration felling was not possible except on limited patch occurring on the easier ground. The Forests situated on steep and slopes were allotted to this Working Circle which contained Deodar, Kail, Fir & Spruce situated in far flung inaccessible areas usually at the head of the stream. All conifer crops were enumerated down to 20 cm DBH in 10 cm Diameter classes. The growing stock contained a large proportion of over mature crops.

7.5.3.1 Rotation and exploitable size: The exploitable diameter was fixed at 70 cm DBH with the rotation of 180 Years to 210 Years if need be.

7.5.3.2 Silvicultural System: The Forests were managed under the modified Punjab Selection System which permits retention of small compact groups of even aged trees throughout the rotation. No regularity in the Forests was aimed at and the Forest was prescribed to be worked under Selection principle inducing regeneration naturally.

7.5.3.3 Calculation of Yield: It was estimated that 50% of the IB to ID stock of Deodar was available over 1st Fifteen Years and 60% of the I Class trees of Kail & Chil were expected to be removed. In case of Fir, two-third of IB & ID class trees was expected to be available.

7.5.3.4 Prescribed Yield:

Table No. 7.8

	Yield(M³)
Species	
Deodar	594.64
Kail	28.31
Chil	0
Fir	3567.88
OBL	0
Total	4190.83

7.5.3.5 Control of Yield: The volume of all I and II Class trees was to be counted towards Yield which should not exceed $\pm 10\%$ at the end of Fifteen Years period.

7.5.3.6 Results of Working: The following was the position of deviation at the end of Fifteen Years period i.e. on 31.03.1964 which has been collected from the Working Plan of Seraj Forest Division written by Sh. R.P.Jaiswal.

Table No. 7.9

Name of Working Circle	Spp.	Annual Yield Prescribed (M³)	Deviation as on 31.03.1964 (M³)
Selection Working Circle	Deodar	56.63	782.40
	Kail	1557.45	(-) 646.76
	Fir	849.52	(-) 2748.48

All the Forests of the Working Circle were worked out as prescribed. This means that the yield was over assessed by WPO. As far as the reproduction is concerned, it was observed that the regeneration works were taken up at the very nominal extent in these areas and the natural regeneration did not come up. The total effect was that the position of regeneration was not satisfactory.

7.5.3.7 Protection Working Circle: This includes all the Reserved and Demarcated Protected Forests which were removed and inaccessible and were not included in any of Working Circle described above. They lie at the head of valleys and streams on difficult ground and stretch for far beyond the trees growth. This Working Circle contained all other DPFs and RFs which had not been allotted to any of the other Working Circle prescribed earlier having situated on remote and precipitous areas or having vegetation of low economic values. These Forests were however, very important from soil and water conservation point of view. Third class Forests or UPFs were also included under this Working Circle. No felling was prescribed in these Forests except meeting a demand of Right Holders for TD. No enumeration was carried out in these Forests, however, the removal of Kharshu Oak under proper scheme and demand.

7.6 The Fifth draft Working Plan by Sh. D.P.Kapoor (1964-65 to 1978-79):

The previous Plan by Sh. K.L.Aggarwal provided an intermediate revision after Fifteen Years period. Post independence period was a lot of developmental activities and new orientation and uses of Forest products was realized. The National Forest Policy was framed during 1952. A news print factory was conceived which would use a Fir, Spruce Timber of this State. The demand for Broad Leaved species increased manifold for use in defence factories and in the textile industries in the Civilian Sector. Therefore, Sh. Y.P.Bajaj was posted as WPO to revise the Aggarwal's Plan during 1961. He was replaced by Sh. S.S.Chahal in 1963. Sh. D.P.Kapoor joined during 1966-67 and continued till the completion of the Plan during 1972. Sh. D.P.Kapoor prepared the Draft Plan for the period of 1964-65 to 1978-79 and submitted the proposal in 1972-73. The Draft Plan was however, could not be approved. This Plan was only academic interest, but the prescription and yield was controlled under Aggarwal's Plan. The following Working Circles were constituted by Sh. D.P.Kapoor:-

- (i) Regular Working Circle.
- (ii) Fir Working Circle.
- (iii) Protection Working Circle.
- (iv) Broad- Leaved (Over-Lapping) Working Circle.

Selection Working Circle of Aggarwal's plan was abolished and the Forests were transferred and merged with other Working Circles, according to the composition of crop and configuration of the ground. The Selection Working Circle had failed, since Forests under it could not be worked effectively under the selection criterion, on account of steep and remote terrain. Regeneration too, was thwarted, on account of heavy grazing and browsing. Steady increase in demand for Walnut, Maple, Bird Cherry and Kharsu warranted need for Broad- Leaved (Over-Lapping) Working Circle. In Fir Working Circle, in addition to the Forest under Fir Working Circle in Aggarwal's Plan and some Forests from Regular Working Circle and Selection Working Circle of Previous Plan bearing Fir and Spruce which were suitable for working under Punjab Irregular Shelterwood System were included in this Working Circle. Fir and Spruce were the principal species and in addition to Broad Leaved species Walnut, Kharsu, Maple, Birdcherry etc. found along the depression and water course. The following felling series were constituted:

- i. **Newsprint felling series:** It covered the Forests of Anni Range.
- ii. **Departmental felling series:** It consisted of Forests of Kurpan Range.

iii. **Packing case felling series:** No Forests of Outer Seraj were allotted to this series.

7.6.1 Regular Working Circle: General constitution of the working circle remained the same as in Aggarwal plan. The areas fit for working under Punjab irregular shelterwood system were allotted to this working circle. Forests containing Fir predominantly were transferred to Fir Working Circle, while such Forests, where Kail or Deodar was principal species, were allotted to this Working Circle. The large compartments were subdivided and Fir bearing areas were transferred to Fir Working Circle.

7.6.2. Analysis and Evaluation of crop: -No enumerations were undertaken. The species wise growing stock, however, was worked out from the serial photographs taken by ShG.A.Jones, a Canadian during 1962-64. However, it was found from the field observations that there was lot of error in assessment of the growing stock by this method.

7.6.3 Rotation and Exploitable diameter: The rotation was fixed at 150 Years with an exploitable diameter of 60 cm dbh.

7.6.4 Division into periodic blocks: Five PBs were recognized, PB-I being the most mature while PB-V, the youngest crop. PB-III&IV were merged to be called as PB-Inter.

7.6.5 Total prescribed annual yield (in M³): The total annual yield PB wise prescribed was as under: -

Table No. 7.10

Name of WC	Species	PB-I	PB-II	PB-Inter	PB-V	Total
RWC	Deodar	1300	300	500	1000	3100
	Kail	1100	200	300	300	1900
	Fir/Spruce	1900	200	300	400	2800
	Chil	600	10	10	200	820
Total		4900	710	1110	1900	8620

7.6.6 Control of yield: All the classes of trees felled for any purpose were to be counted towards the yield and the deviation after 15 Years should not be more than 10% of all conifers combined.

7.6.7 Results of Management: Since there was no Working Plan in the tract of Outer Seraj for the period from 1979-80 to 1994-95 and the works were executed on the basis of felling programmes approved from CCF time to time. During this period, no major felling was carried out except some fellings of Fir Forests for the supply of packing cases etc besides meeting the demands of local Right Holders which were marked regularly under TD Scheme. Due to imposition of complete moratorium on green fellings during the year 1986-87, no green fellings were done and only the salvage trees were marked and handed over to HP State Forest Corporation for working.

During this period, the control of yield was exercised on the basis of yield control of Aggarwal's Plan. The deviation as it stood on 01.04.1979 has been considered for the calculation of the yield and the position of deviation at the end of 31.03.1994 is tabulated in Table No.7.11below:

Table No. 7.11

Name of WC	Name of Spp.	Annual Prescribed PB-I (M ³)	Annual Prescribed PB-V (M ³)	Total Yield removed (1993-94)		Deviation		Cumulative Deviation (M ³)	
				PB-I (M ³)	PB-V (M ³)	PB-I (M ³)	PB-V (M ³)	PB-I (M ³)	PB-V (M ³)
RWC	Deodar	509.69	226.53	14.568	218.928	495.122	7.602	-5957.549	174.639
	Kai	339.79	141.58	1.274	71.948	338.516	69.632	-2968.593	258.654
	Chil	141.58	113.26	0	0	141.58	113.26	-1909.675	-179.036
	Fir/Spruce	226.53	0	4710.148	14.1	-4483.618	-14.1	4071.238	-1483.233
	OBL	0	0	0	4.997	0	-4.997	82.739	18.29
	Total	1217.59	481.37	4725.99	309.973	-3508.4	171.397	-6681.84	-1210.69

7.6.8 Fir Working Circle: In addition to the Forests under Fir Working Circle of Aggarwal's plan, some Forests from Protection Working Circle, Regular Working Circle and Selection Working Circle of the previous Working Plan bearing Fir and Spruce as principal species and which could be worked under concentrated regeneration fellings (Punjab Irregular Shelter wood System) were included in this Working Circle. Fir and Spruce were the principal species in addition to Broad Leaved species like Walnut, Khanor, Maples and Bird cherry, etc found along depression and water courses.

7.6.9 Analysis and Evaluation of crop: No enumerations were undertaken. The species wise growing stock, however, was worked out from the serial photographs taken by Sh. G.A. Jones. The following felling series were constituted:

- News print felling series:** It covered the Forests of Anni Range.
- Departmental felling series:** It consisted of Forests of Kurpan Range.
- Packing case felling series:** No Forests of Outer Seraj were allotted to this series.

7.6.10 Silvicultural System: The Silvicultural system adopted was Clear Felling System, with provision to retain advance growth occurring singularly or in groups, up to 40 cm d. b. h. and carrying out selection marking on steep and broken grounds in PB I, and selection –cum–improvement felling in other PBs. Regeneration was to be artificially induced. Silver Fir and Spruce were the species propagated, though Deodar was recommended in the lower parts, in the 'tension belt'. Sites where broad leaved species existed were to be left as such and conifers were not to be forced in here. Thus Acer, Walnut, Bird cherry, Ash and Poplars were raised on such sites.

7.6.11 Division into periodic blocks: Three fixed periodic blocks were created having 1/3 area under each period.

7.6.12 Rotation and Exploitable diameter: The rotation/conversion period of 90 Years was adopted and period of 30 Years was considered ideal for regeneration. The three periodic blocks were thus framed.

7.6.13 Yield calculation: It was estimated that 90% of the volume of growing stock, above 40 cm d. b. h. In PB I, would be available for fellings. Another 10% was estimated to be available from growing stock below 40 cm d. b. h. No major fellings were recommended from PB- II & III. Only sanitary fellings from PB-II and thinning-cum-improvement fellings in PB-III were suggested. It was estimated that 10% & 20% of the volume of growing stock in PB II & III respectively would be available for fellings. The following gives an annual yield (in M3 PB wise) for Seraj Division:

Table No. 7.12

	PB I	PB II	PB III	Total
News print felling series.	29700	3600	6000	39300
Departmental felling series.	22800	2300	4800	29900
G. total:	52500	5900	10800	69200

No separate yield was prescribed for packing cases felling series and the supply for packing cases was intended to be obtained from timber removed from newsprint, departmental fellings series and Fir Forests of Regular Working Circle.

7.6.14 Control of yield: All the classes of trees removed from PB-I, II & III for whatever purpose was prescribed to be counted towards the yield. The deviation at the end of 15 Years period was prescribed to check within 10% of the prescribed yield.

7.6.15 Results of Management: Since there was no Working Plan in the tract of Outer Seraj for the period from 1979-80 to 1994-95 and the works were executed on the basis of felling programmes approved from CCF time to time. During this period, no major felling was carried out except some fellings of Fir Forests for the supply of packing cases etc besides meeting the demands of local Right Holders which were marked regularly under TD Scheme. Due to imposition of complete moratorium on green fellings during the year 1986-87, no green fellings were done and only the salvage trees were marked and handed over to HP State Forest Corporation for working.

During this period, the control of yield was exercised on the basis of yield control of Aggarwal's Plan. The deviation as it stood on 01.04.1979 has been considered for the calculation of the yield and the position of deviation at the end of 31.03.1994 is tabulated in **Table No. 7.13** below:

Table No. 7.13

Name of WC	Name of Spp.	Annual Prescribed PB-I, II (M ³)	Annual Prescribed PB-Ors (M ³)	Total Yield removed (1993-94)		Deviation		Cumulative Deviation (M3)	
				PB-I (M ³)	PB-Ors (M ³)	PB-I,II	PB-Ors	PB-I,II	PB-Ors
FWC	Fir/Spruce	877.81	821.18	0	3292.99	877.81	821.18	7221.948	6375.424
	Deo	0	0	0	0	0	0	199.383	27.89
	Kai	0	0	0	0	0	0	142.692	135.512
	OBL	0	0	0	14.74	0	0	536.899	14.74
	Total	877.81	821.18	0	3307.73	877.81	821.18	8100.922	6553.566

7.6.16 Protection Working Circle: his Working Circle contained the rest of Demarcated Protected Forests and Reserved Forests not allotted to Regular Working Circle for the Fir Working Circle and contained the Forests of Deodar, Kail, Fir/Spruce and Broad Leaved species like Maple, Walnut, Khanor etc. In addition to these UPFs or 3rd Class Forests near the village etc. were also allotted to this working circle.

7.6.17 Analysis and Evaluation of crop: No enumerations and analysis were carried out in these Forests. And no stock maps were also prepared as it was not considered necessary. However, the Forests varied from open in the 3rd Class Forests near the habitation to a close density in interior inaccessible Forests. Fir/Spruce Forests formed major constituents of this Working Circle. Most of the area of these Forests was rocky and alpine pasture devoid of any tree growth.

7.6.18 Method of treatment: Keeping the protective value of the Forests in view, no fellings were prescribed except removal of trees by way of grant of TD. The 3rd Class Forests near habitations were the worst sufferers in this case being heavily tapped for TD for meeting the requirement of local people. The closures followed by sowing and planting were taken up in 3rd Class Forests but the results were not encouraging. Some soil conservation measures were also adopted on badly eroded 3rd Class areas but the results were not very encouraging.

7.6.19 Results of Management: Since there was no Working Plan in the tract of Outer Seraj for the period from 1979-80 to 1994-95 and the works were executed on the basis of felling programmes approved from CCF time to time. During this period, no major felling was carried out except meeting the demands of local Right Holders which were marked regularly under TD Scheme. Due to imposition of complete moratorium on green fellings during the year 1986-87, no green fellings were done and only the salvage trees were marked and handed over to HP State Forest Corporation for working.

During this period, the control of yield was exercised on the basis of yield control of Aggarwal's Plan. The deviation as it stood on 01.04.1979 has been considered for the calculation of the yield and the position of deviation at the end of 31.03.1994 is tabulated in **Table No. 7.14** below:

Table No. 7.14

Name of WC	Name of Spp.	Annual Prescribed	Yield Removed (1993-94)	Deviation as on 31.03.1994	Cumulative Deviation as on 31.03.1994
PWC	Deo	0	10.054	10.054	246.253
	Kail	0	2.41	2.41	346.444
	Chil	0	0	0	9.165
	Fir/Spruce	0	2489.58	2489.58	15468.242
	OBL	0	0	0	6611.875
	Total	0	2502.044	2502.044	22681.979

7.6.20 Broad Leaved (Over Lapping) Working Circle: This Working Circle overlapped over the Broad Leaved Forests occurring in Regular, Fir and Protection Working Circle. Enumeration of important Broad Leaved trees was carried out down to 20 cm d.b.h in 10 cm diameter classes. In compact blocks of broad leaved patches, clear fellings system with a provision to retain

compact groups of advance growth up to 40 cm d.b.h was prescribed. Rotation was fixed at 100 Years. Yield was estimated at 50% of the growing stock. 3rd Class Forests were excluded from fellings and yield calculation. The Annual yield (in M3) was prescribed only for a few species of old Seraj , Outer Seraj and old Kullu Division as under:

Table No. 7.15

Sr.No.	Species	Annual Yield (In m3)
1	Mapple	1620
2	Bird cherry	100
3	Kharshu	4356
4	Walnut	815
5	Horse chest Nut	2120
6	Ban Oak	420
7	Mohru Oak	148

The accumulated annual yield was allowed to be removed periodically.

7.6.21 Results of the working: No schedule for fellings was prescribed. The Broad Leaved trees were extracted from some Forests. The replenishment of Broad Leaved trees by way of planting trees as neglected and nothing tangible was achieved. Most of the Broad Leaved trees were extracted from Fir Forests.

7.6.22 Roads: No new roads were constructed during the period of Plan and there were no suggestion for construction of new road and path.

7.6.23 Building: Except for a couple of buildings, no new buildings or Rest Houses were constructed during the Plan period.

7.7 Period from 1979-80 to 1994-95: There was no Working Plan in the tract of Outer Seraj for the period from 1979-80 to 1994-95 and the works were executed on the basis of felling programmes approved from CCF time to time. During this period, no major felling was carried out except some fellings of Fir Forests for the supply of packing cases etc besides meeting the demands of local Right Holders which were marked regularly under TD Scheme. Due to imposition of complete moratorium on green fellings during the year 1986-87, no green fellings were done and only the salvage trees were marked and handed over to HP State Forest Corporation for working.

During this period, the control of yield was exercised on the basis of yield control of Aggarwal's Plan. The deviation as it stood on 01.04.1979 has been considered for the calculation of the yield and the position of cumulative deviation (Species Wise) at the end of 31.03.1994 of all Working Circle is given in the table above under each Working Circle.

7.8 The Sixth Working Plan by Sh. Shamsher Singh Negi (1996-97 to 2011-12):

This Working Plan dealt with the RF's, I & II Class DPF's and III Class Listed UPF's of all the areas falling within the jurisdiction of Anni Forest Division. In conformity with objectives of management, five numbers of Working Circles namely (i) The Deodar-Kail Working Circle (ii) The Chil Working Circle (iii) The Fir and Spruce Working Circle (iv) Plantation Working Circle (v) The Protection Cum Rehabilitation Working Circle were constituted under this Working Plan. This Plan was prepared for the period of 15 Years w.e.f. 1996-97 to 2011-12 and further extended up to 2014-15.

- 7.8.1. The Deodar and Kail Working Circle (2181.95 Ha):** This Working Circle includes all the Deodar and Kail Forests having pure crop of Deodar and Kail or having 60% or more of each species on moderate/steep to moderate slope in composition in a compartment of all the Reserve, Demarcated and Undemarcated Protected Forests. The total area of this Working Circle was 2181.95 Ha. The main objectives of management were to gradual conversion of irregular stock to normal stock, thereby building up the growing stock and to obtain maximum sustained yield of timber and to restock PB-I area as possible by artificial regeneration. Also to protect and preserve the Forests in consonance and inconformity with the Policy of the State Government so as to maintain the ecosystem. The total enumerations down to 10cm d.b.h in 10 cm diameter classes were carried out in all PB-I and PB-IV of this Working Circle. While partial enumeration by the method of random sampling taking well defined topographical areas either as a full compartment, sub-compartment or part thereof as unit for measurement had been carried out in PB-II and III and the results were estimated/ extrapolated accordingly. The total number of sample taken in PB-II & III was 6 & 4 No's respectively. The Forest of this Working Circle was proposed to be managed under Punjab Shelter wood system. The regeneration period was fixed at 30 years for all the species occurring in this Working Circle. The rotation period at 120 years was fixed, based on age at which the trees would attain the diameter of 60 cms. Dbh. With rotation at 120 years and regeneration period of 30 years, there were four periodic blocks with specific allotment. Only one felling series was prescribed.
- 7.8.2. Prescribed annual yield:** The yield in this Working Circle was calculated by Hufnagel's Formula. As prescribed in Para 2.20, the P.B. wise annual yield was prescribed and is tabulated in **Table No. 7.16**

Table No. 7.16

Species	PBI (in M ³)	PBIV(in M ³)	Total(in M ³)
Deodar	2400	3400	5800
Kail	1700	400	2100
Rai/Fir	2000	1200	3200
Chil	90	15	105
Total	6190	5015	11205

No yield was prescribed from PBII and PBIII areas but the removal there from were to be counted towards PBI.

7.8.3. Result of the Working Plan: No Regeneration felling have been carried out due to blanket ban on green felling. However, on the basis of selection felling tree has been marked to right holders in TD. Beside these the salvage marking has also been carried out. The cultural operations as prescribed in the plan were not followed during the plan.

- a)** The total volume removed from this Working Circle as per control forms, during the plan period as it stood on 31.3.2014 is tabulated in table **No:- 7.17**

Table No: - 7.17

Species	PB-I					PB- II&III					PB-IV				
	Previous Balance in M3	Prescribed annual yield in m3	Yield removed in m3	Excess / Deficit	Cumulative Deviation in m3	Previous Balance in M3	Prescribed annual yield in m3	Yield removed in m3	Excess / Deficit	Cumulative Deviation in m3	Previous Balance in M3	Prescribed annual yield in m3	Yield removed in m3	Excess / Deficit	Cumulative Deviation in m3
Deodar	361813.71	43200	597.57	-42602.43	-404416.14	27437.79	0	2334.16	2334.16	29771.95	51813.71	51200	378.09	60821.1	-578958.2
Kail	250825.64	30600	801.71	-29798.29	-280623.93	36826.23	0	2956.93	2956.93	39783.16	59727.31	7200	143.41	7056.59	-66783.9
Rai/Fir	281596.97	36000	3419.68	-32580.32	-314177.29	2811.33	0	455.16	455.16	3266.49	181143.37	21600	223.83	21376.7	-202520.04
Chil	-13768.6	1620	0.14	-1619.86	-15388.46	0	0	0	0	0	-2295	270	0	270	-2565
OBL	371.514	0	61.919	61.919	433.433	635.868	0	105.978	105.978	741.846	0	0	0	0	0
Total	-907754.056	111420	4760.37	-106659.6	-1014413.69	67708.69	0	5850.96	5850.96	73560.91	-761302.78	90270	745.64	89524	-850827.14

The above result shows that the yield position in this Working Circle as on 31-3-2014 is in deficit overall which is on account of ban on felling of green trees.

- I. No major felling/green felling was carried out during the plan period. Only occasional TD grants were made besides salvage marking during the plan period.
- II. Plantation proposed in this Working Circle was not followed strictly. However plantations were carried out subject to availability of funds and man power.
- III. The prescription of the Working Plan in general was followed. Attention was not given to the subsidiary silvicultural operation and other works.

7.8.4. The Chil Working Circle (897.18 ha): This Working Circle covered all the Demarcated and Undemarcated Protected Forests, containing chil as a pure crop or Forest containing chil as 60% or more in composition. The total area of this Working Circle was 897.18 hac. The main objective of management were (i) to gradual conversion of irregular stock to normal stock, thus to build up growing stock to the extent possible under the prevailing conditions. (ii) To restock the poorly stocked and blank area through artificial means. (iii) To obtain maximum yield of timber, resin on sustain basis (IV) to protect the Forest from fire as well as biotic interference. There was only one felling series. (v) To improve the existing Forest covers for soil and water conservation. The total enumeration down to 10 cm d.b.h in 10 cm diameter classes has been carried in PB-I & IV areas of this Working Circle. While partial enumeration has been carried out in the remaining periodic block and the results were statistically analyzed. The Forests allotted to this Working Circle were to be managed under the Punjab Shelter wood system. The marking were to be done on selection principle. The rotation of 100 years was fixed with an exploitable diameter of 50 cms dbh. Regeneration period of 25 years was fixed to regenerate the area naturally supplemented with artificial regeneration. With rotation at 100 years and regeneration period of 50 years, there were four periodic blocks with specific allotment. The felling cycle of 15 Years corresponding to the Plan period was adopted.

7.8.5. Prescribed annual yield: The yield in this Working Circle was calculated by Hufnagel's Formula. As prescribed in Para 4.22, the P.B. wise annual yield is tabulated in table No.7.18

Table No. 7.18

Species	PBI (in M ³)	PBIV (in M ³)	Total (in M ³)
Deodar	20	5	25
Kail	5	6	11
Chil	500	600	1100
Total	525	611	1136

The annual yield was proposed not to be exceeded by 25% and was further proposed to be checked in every 5th year when the cumulative deviation should be within +-(10%).

7.8.6 Result of the Working Plan: No regeneration fellings were under taken due to ban on green felling. However, on the basis of selection felling, trees have been marked to the right holders under timber distribution scheme. In addition to this salvage marking has also been carried out. The regeneration status in Forest which was worked during the plan period is satisfactory. Control burning operations were followed, fire line maintained and needles were removed from the Forest floor as per availability of funds and as per

recommendation of the Working Plan. As prescribed in Para 2.16 of the plan the resin tapping works were carried out through H.P. State Forest Corporation, Forest working division Rampur by rill method, the detail of which is given under Para 4.2.3

The total volume removed from this Working Circle as per control forms, during the plan period including Rampur & Kotgarh Forest Division as it stood on 31.3.2014 is tabulated in table No:- 7.19.

TableNo.7.19

GENERAL ABSTRACT OF PAST YIELD REMOVED															
Chil Working Circle															
Species	PB-I					PB- II&III					PB-IV				
	Previous Balance in M3	Prescribed annual yield in m3	Yield removed in m3	Excess / Deficit	Accumulative Deviation in m3	Previous Balance in M3	Prescribed annual yield in m3	Yield removed in m3	Excess / Deficit	Accumulative Deviation in m3	Previous Balance in M3	Prescribed annual yield in m3	Yield removed in m3	Excess / Deficit	Accumulative Deviation in m3
Deodar	-3060	360	0	-360	-3420	138.05	0	27.61	27.61	165.66	-234.92	90	42.86	-41.07	-282.06
Kail	-765	90	0	-90	-855	0	0	0	0	0	-632.68	108	-20.66	-85.33	-761.34
Rai/Fir	0	0	0	0	0	5.95	0	0.85	0.85	6.8	0.85	0	0	0	0
Chil	-76330	9000	24.28	-8975.7	-85306	9477.24	0	805.77	805.77	10283	-84394	10800	-6600	-10800	-102600
OBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	-80155	9450	24.28	-9425.7	-89581	9621.16	0	834.23	834.23	10455.4	-85261	10998	71.6	-10926	-103643

1. The above result shows that the yield position in this Working Circle as on 31-3-2014 is in deficit overall which is on account of ban on felling of green trees.
2. No major fellings/green fellings were done in this Working Circle and only occasional T.D. grants were made besides salvage marking during the plan period.
3. Plantation proposed in this Working Circle was not followed strictly. However plantations were carried out subject to availability of funds and man power.
4. The prescription of the Working Plan in general was followed. Attention was not given to the subsidiary silvicultural operation and other works.

7.8.7 The Fir and Spruce Working Circle (2635.32 ha): This Working Circle includes all the Forests which predominantly support fir, spruce Forests having pure crop of 60% or more in composition in a compartment. These Forests have been exploited during the past for packing cases. The natural regeneration in these Forests is poor and the artificial regeneration is inadequate. The total area of this Working Circle was 2635.32 hac. Including Kotgarh Forest division. The main objective of management was to improve the existing soil cover for water and soil conservation, to replace mature and over mature growing stock within the conversion period, to obtain maximum progressive sustain yield, to restock all the poorly stocked bland patches by natural and artificial means, to protect the Forest from damages caused by various agencies. The Punjab Shelter wood system was followed. Conservative felling were prescribed to be done on steep and precipitous slopes. Rotation period was fixed at 120 years. Since the Forests allotted to this Working Circle were in the course of conversion, therefore, the rotation period had little significance. The regeneration period was fixed at 30 years. With the rotation at 120 years and regeneration period of 30 years, the whole Working Circle was divided into four fixed periodic blocks.

a) Prescribed annual yield: The yield in this Working Circle was calculated by Hufnagel's formula. As prescribed in Para 4.13, the P.B. wise annual yield was prescribed and is tabulated in table No:-7.20

Table-7.20

Species	PBI	PBIV	Total
Deodar	190	125	315
Kail	210	300	510
Chil	-	-	-
Spruce	2280	2000	4280
Fir	1600	1800	3400
Total	4280	4225	8505

No yield was prescribed from PBII and PBIII areas but the removal there from were to be counted towards PBI.

All the removals of all age classes and for all purposes were prescribed to be counted towards the yield. The deviation in a year was prescribed to not exceed 25% and a slab for 5 years should not exceed of 10% of the prescribed yield.

b) Result of the Working Plan: The total volume removed from this Working Circle as per control forms, during the plan period including Rampur & Kotgarh Forest Division as it stood on 31.3.2014 is tabulated in table No:-7.21.

Table No. 7.21

GENERAL ABSTRACT OF PAST YIELD REMOVED															
Fir / Spruce Working Circle															
Species	PB-I					PB- II&III					PB-IV				
	Previous Balance in M3	Prescribed annual yield in m3	Yield removed in m3	Excess / Deficit	Accumulative Deviation in m3	Previous Balance in M3	Prescribed annual yield in m3	Yield removed in m3	Excess / Deficit	Accumulative Deviation in m3	Previous Balance in M3	Prescribed annual yield in m3	Yield removed in m3	Excess / Deficit	Accumulative Deviation in m3
Deodar	0	0	0	0	0	3382.85	0	215.67	275.59	3658.44	0	0	0	0	0
Kail	302.21	0	35.02	35.02	337.23	5331.98	0	274.26	445.4	5777.38	93.36	0	7.78	7.78	101.14
Rai/Fir	-569237	70200	2405	-67795	-637032	103664	0	6994.65	9523.21	113187	-107386	14400	1251.14	-13149	-120535
Chil	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OBL	4541.724	0	756.954	756.954	5298.678	29968.3	0	1762.74	3139.24	33107.5	0	0	0	0	0
Total	-564393	70200	3196.97	-67003	-631396	142347	0	9247.32	13383.4	155730	-107293	14400	1258.92	-13141	-120434

- I. The above result shows that deficit felling in case of Fir/spruce species and there was excess felling in other species in the Working Circle. However the overall deviation shows that there was excess felling in this Working Circle.
- II. No major fellings/green fellings were carried out during the plan period. Only occasional TD grants were made besides salvage marking during the plan period.
- III. Plantation proposed in this Working Circle was not followed strictly. However plantations were carried out subject to availability of funds.
- IV. The most of area could not be regenerated due to paucity of funds.
- V. The prescription of the Working Plan in general was followed. Attention was not given to the subsidiary silvicultural operation and other works.

7.8.8 The Plantation Working Circle (1621.61 ha): This Working Circle included the young plantation and other blank areas and all area which were under stocked but were suitable for raising plantation of valuable and economical important species. The total area of this Working Circle including Kotgarh division was 1621.61 hac. The special objects of management were (i) to develop and augment the Forest resources of the area by Afforestation of blank and scrub areas with useful/suitable species. (ii) To conserve soil and water through Afforestation (iii) to raise compact plantations and to make available the valuable raw material for wood based industries. (iv) To rehabilitate the degraded tree less areas with valuable species to meet the demand of local right holders. (v) to raise poplar and other fast growing species in suitable areas. Relascope sampling had been carried out down to 10 cms dia class in all the compartments of this Working Circle having trees. Only plantation was prescribed to be raised in this Working Circle. Since blank areas were prescribed for Afforestation, therefore no felling has been prescribed.

- a. Sequence of planting: The detailed range wise plantation programmes were prescribed and plantation was carried out under different scheme in Rampur Forest Division during the plan period.
- b. Results of the implementation of the plan

- I. The prescription and suggestions made in the Working Plan were not followed in practice due to administrative and financial problems.
- II. Effective closures of the plantation were suggested but its effectiveness was not prescribed.
- III. Although no yield was prescribed, yet the total volume removed from this Working Circle during the plan period including Rampur Forest Division was 431.097 m³ and the position of deviation as it stood on 31.3.2012 is tabulated in table No:- 7.22

Table No:-7.22

Species	Balance as on 31.3.2011	Felling during the year	Cumulative deviation as on 31.3.2012	Remarks
Deodar	24.778	0	24.778	Neither any yield nor any control was prescribed
Kail	69.724	0	69.724	
Fir/Spruce	22.228	0	22.228	
Chil	265.121	0	265.121	
B/L	49.246	0	49.246	
Total	431.097	0	431.097	

7.8.9 The Protection cum rehabilitation Working Circle (11807.75 ha): This Working Circle includes all the Forests which were not included in other Working Circle. Besides, all Forests situated on precipitous slopes which were not fit for working under any silvicultural system had also been included in this Working Circle. The total area of this Working Circle was 11807.75 hac. including Kotgarh Forest division. The main objectives of management were (i) to protect the hill sides against denudation and erosion by preserving existing Forests and by enhancing the Forest cover wherever feasible (ii) to improve in quality and density of existing growing stock through sowing and planting (iii) to protect the Forest from indiscriminate exploitation and to preserve them as representative of ecosystem of the region (iv) to conserve the biodiversity (v) Consistent with above to meet the demand of local right holders for timber and other Forest produce. No enumerations were carried out in these areas. However, the densities of each compartment have been recorded in CH files. The Forest of this Working Circle was proposed to be preserved and protected. Therefore, no silvicultural system was prescribed. However, salvage markings were proposed. The estimated total growing stock of this Working Circle was 351930 M3. The estimation of the growing stock was done on the basis of sample survey in stratified and randomly classified compartment. The culturable blanks were proposed to be restocked with local and suitable species like Deodar, Kail, Fir and Spruce, Bird cherry, Mapple etc.

7.8.10 Result of the implementation of Working Plan: Though no yield was prescribed and only removals were suggested to meet the demand of right holders and salvage removal of trees i.e. dead, dying, dry and uprooted trees in the plan. The status of regeneration in this Forest is very poor and artificial regeneration is also inadequate. The total volume removed from this Working Circle during the plan period including Rampur & Kotgarh Forest Division as it stood on 31.3.2012 and is tabulated in table No.-7.23

Table No.-:7.23

Protection Working Circle					
	Previous Balance in M3	Prescribed annual yield in m3	Yield removed in m3	Excess / Deficit	Accumulative Deviation in m3
Deodar	138916.02	0	9911.43	9911.43	148827.45
Kail	67599.36	0	5260.56	5260.56	72859.92
Rai/Fir	983033.85	0	105314.61	105314.61	1088348.46
Chil	2575.54	0	245.94	245.94	2821.48
OBL	301390.548	0	39909.247	39909.247	341299.795
Total	1493515.318	0	160641.787	160641.79	1654157.105

7.9 Miscellaneous Regulations

By and large the prescription prescribed under miscellaneous regulations was followed during the currency of the Working Plan. The trees were granted to the right holders as per settlement record and necessary entry for the grant has been made in the form No. 12. No separate compartment or sub compartment were formed, however, the existing boundary pillars have been checked/ repaired as per availability of the budget and as per quinquennial programme prescribed in the Working Plan during the currency of the plan period. The existing fire lines were maintained and cleared according to the availability of budget. The detail of fire incidence occurred during the plan period is given in Chapter-IX, Part-II.

7.10 Past Yield: The yield removed from the various Working Circle during the plan period is given in *Appendix No-XIV, XV, XVI, XVII & XVIII*. The average out turn percentage (last four years) for working of the lots handed over to HPSFDC is given as under:

Table No. 7.24

Sr. No.	Type of lot	Out turn %age
1.	Timber	45%
2.	Resin	34 qlt. Per 1000 blazes

(Source: HPSFDC Working Division, Rampur)

7.11 Past revenue and expenditure: The statement of summery of revenue and expenditure and net surplus from the Forests under various schemes incurred during Negi's plan are given in table No.-7.25

Table No.-7.25

Year	Revenue	Expenditure	Surplus
1993-94	5560788	15663314	- 10102526
1994-95	5307715	18667066	- 13359351
1996-97	15596909	24590790	- 8993881
1997-98	1522554	2935800	- 1413246
1998-99	3354938	32383627	- 29028689
1999-00	371708	15140566	-14768858
2000-01	266370	17306750	-17040380
2001-02	1075570	13697872	-12622302
2002-03	496458	16061474	-15565016
2003-04	527243	15373564	-14846321
2004-05	12623529	17189200	-4565671
2005-06	27220730	26548200	672530
2007-08	1312166	25258400	-23946234
2008-09	718598	33323400	-32604802
2009-10	1918612	37614163	-35695551
2010-11	817880	20178454	-19360574
2011-12	1905108	38789700	-36884592
2012-13	9561407	48801100	-39239693
2013-14	877120	54029600	-53152480
2014-15	4170373	53612252	-49441879
2015-16	1913807	52902351	-50988544
2016-17	1585154	58169314	-56584160
2017-18	1415261	75198718	-73783457
2018-19	23189785	72219900	-49030115
2019-20	4193795	86163882	-81970087

Source: i) Rampur Forest Division (1993-94 to 1998-99)

ii) Anni Forest Division (1999-00 to 2019-20)

CHAPTER-VIII

STATISTICS OF GROWTH AND YIELD

8.1 General:

In order to save time and money and on account of non availability of suitable field staff, no basic data was collected in the field for preparation of volume tables and for finding out the rate of growth of different species occurring in the area. It is also difficult under the current establishment and infrastructure facilities to obtain and analyze the data. However, for compilation of growth and yield statistics of various species, the various available records were consulted.

- (i) Growth & Yield statistics of common Indian Timber species (Himalayan region Volume I) complied by director of Forest Education FRI, 1967.
- (ii) *Cedrus deodara* (Deodar) multiple yield tables. *Cedrus deodara* (Deodar) by H.G.Champion and I.D. Mahendru, Indian Forest Records Volume XV, Part VIII, Silvicultural Series, 1933.
- (iii) *Pinus wallichiana* (Kail) *Pinus excelsa* (Blue pine) by H.G.Champion Records Volume XIII, Part X.
- (iv) PIS, North zone, Shimla Forest Resources of H.P. for Kotgarh, Kullu and Seraj regions 1979.

8.2 Age-diameter relationship:

At the time of revision of 2nd Working Plan for Kullu Forests, Trevor have collected thousands of figures for growth and out turn of Deodar on ring counting's, carried out over 1200 trees for different species. Figures for different species are as under: -

Table No. 8.1

Dia at 4 1/2 Ft.	Age in Years				
	Deodar	Kail	Chil	S. /Fir	Spruce
14" (35Cm)	65	50	60	84	65
18" (45Cm)	80	63	85	104	80
22" (55Cm)	100	82	109	130	100
26" (65Cm)	120	104	143	150	115
30" (75Cm)	155	132	NA	180	135

During this Data collection by Trevor, the standardization of quality class was not there. After recognition of quality classes, the Forests of Outer Seraj are of FRI No. I/II. The yield table for various grades of thinning is available and diameter age relationship for each grade can be compared with the figures derived by Trevor as under: -

- 8.2.1** FRI yield table: I/II quality Deodar Crop with E-grade thinning gives age diameter relationship as under: -

Table No. 8.2

Dia at 4 1/2 Ft.	Trevor's Age	FRI Age
14" (35Cm)	65	64
18" (45Cm)	80	90
22" (55Cm)	100	124
26" (65Cm)	120	160
30" (75Cm)	155	212

8.3 Selection of Volume Table:

It was not considered necessary to collect statistical information de-novo, since such data was collected during the preparation of Working Plan under revision. Local volume table as given in the plan under revision may be adopted in revised plan, which was found to be satisfactory and have therefore, not been revised. The volume table for all the coniferous and broad leaved species of expiring Working Plan of Sh. Shamsheer Singh Negi is reproduced and will be adopted in this Working Plan. The same is tabulated in table No. 8.3

Table No. 8.3

Volume Table/Factor- Anni Forest Division

Species	Diameter Class									
	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100 & above
	(V)	(IV)	(III)	(IIA)	(IIB)	(IA)	(IB)	(IC)	(ID)	(IE)
	Volume in cum									
1	2	3	4	5	6	7	8	9	10	11
Deodar	0.06	0.14	0.42	1.27	2.41	3.54	4.81	6.09	7.08	7.08
Kail	0.06	0.14	0.42	1.27	2.41	3.54	4.81	6.09	7.08	7.08
Chil	0.06	0.14	0.42	1.27	2.41	3.54	4.81	6.09	7.08	7.08
Fir	0.06	0.14	0.85	1.70	3.11	5.10	7.08	8.49	9.34	9.34
Spruce	0.06	0.14	0.85	1.70	3.11	5.10	7.08	8.49	9.34	9.34
Kharsu	0.134	0.30	1.00	1.80	3.00	4.60	6.30	8.00	9.60	12.20
Mohru	0.134	0.30	1.00	1.80	3.00	4.60	6.30	8.00	9.60	12.20
Bird Cherry	0.079	0.10	0.70	1.40	2.20	3.20	4.30	5.60	6.90	9.60
Walnut	0.079	0.20	0.80	1.50	2.50	3.80	5.10	7.20	8.90	11.30
Maple	0.117	0.20	0.70	1.30	2.10	3.30	5.00	6.50	8.50	11.20
Taxus	0.104	0.234	0.467	0.821	1.310	1.945	2.734	3.685	4.803	6.094
Ban Oak	0.134	0.313	0.657	1.201	1.974	2.996	4.285	5.857	7.723	9.894
Shisham	0.094	0.294	0.708	1.336	2.177	3.232	4.50	5.982	7.678	9.587
Tun	0.094	0.294	0.708	1.336	2.177	3.232	4.50	5.982	7.678	9.587
Eucalyptus	0.094	0.294	0.708	1.336	2.177	3.232	4.50	5.982	7.678	9.587
Boxwood	0.094	0.294	0.708	1.336	2.177	3.232	4.50	5.982	7.678	9.587
Carpinus	0.094	0.294	0.708	1.336	2.177	3.232	4.50	5.982	7.678	9.587
Other B/L	0.094	0.294	0.708	1.336	2.177	3.232	4.50	5.982	7.678	9.587

8.4 Recruitment Period:

Recruitment period for different species and age classes has been adopted for this plan from Negi's Plan as under: -

Table No. 8.4

IV-III	III-IIA	IIA-IIB	IIB-IB	IA-IB	IB-IC	IC-ID
Deodar						
17	18	19	19	20	24	24
Kail						
13	14	16	19	19	22	22

Spruce/Fir						
32	30	28	25	25	25	25
Chil						
12	14	17	18	19	22	22

8.5 Increment:

The growing stock has been estimated from the aerial photographs and no enumeration has been carried out during intermediate revision of Aggarwal's Plan. Aggarwal enumerated the total growing stock in Regular and Fir Working Circle up to 20 cm Dia at the time of revision during 1948 and 1949. Aggarwal calculated the figures of increment for Deodar as 2.6 %, Kail as 1.9 %, Chil as 2 %. All the species put together as 2.2%. Dr. R.V.Singh indicated a figure of 2.4 % for Spruce and Silver Fir for Mandi & Nachan Division based on the weighted average of J.C. Sharma in his plan for Kullu Forest Division comparable Seraj Forest Division in quality class and other condition of the crop calculated the increment for Deodar as 1.75 %, Kail 1.08%, Chil as 1.86% and Fir/Spruce 1.26 %, while the increment for all species together worked out as 1.36%.

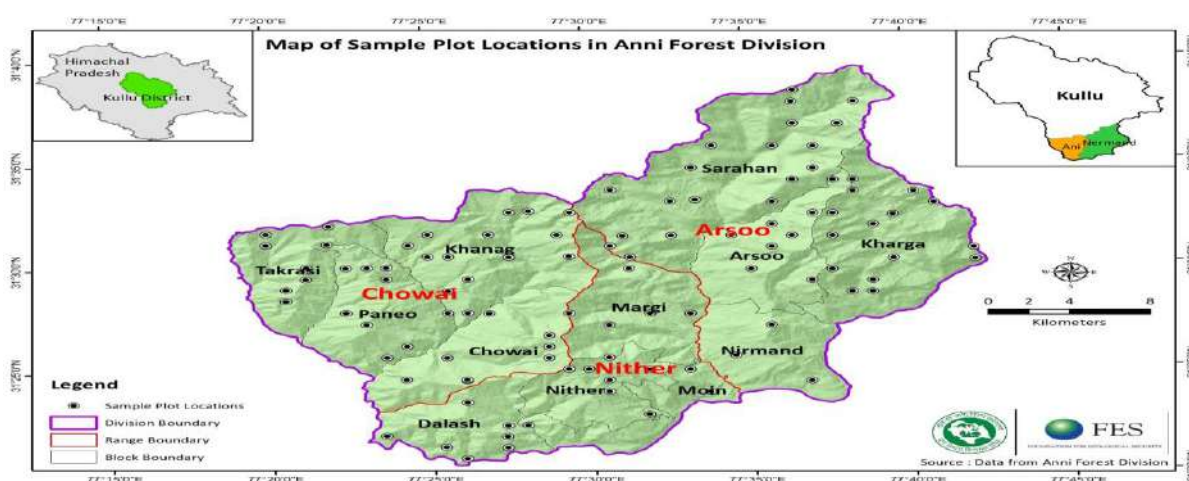
The Forest Survey of India calculated the increment for different species for Kullu, Seraj, Kotgarh Division as 1.74% for Deodar, 1.58% for Kail, 2.16% for Chil, 1.06% for Fir and 1.20% for Spruce. These figures are quite comparable with figures derived by J.C.Sharma for Kullu Forest Division. Hence the figures of Forest Survey of India have been adopted in Negi's Plan.

8.6 Density:

The crops are uneven aged and therefore, the density cannot be compared with the yield table figure. However, ocular estimation of density has been done during the course of taking the samples and has been recorded in Compartment History files.

8.7 Enumeration:

The enumeration was carried out on the grid system bases in the Sample IDs (Plots) of size 0.1 Ha each. The whole of the area of the Anni Forest Division was divided into grids and total 274 Nos. of samples were taken. The enumeration was carried out with the help of GPS 72, Compass, Haga Altimeter and Callipers. The enumerated data was entered in the Plot Enumeration Form and the description of the plot was entered in Plot Description Form (**Appendix-V**).The class wise enumerated data was then analyzed/ extrapolated to assess the growing stock of Deodar-Kail Working Circle, Fir/Spruce Working Circle, and Chil Working Circle & Protection Working Circle. The working circle wise analyzed / extrapolated data have been incorporated in the Plan. For the first time the growing stock of III class Listed UPFs has also been assessed on the basis of Grid System.



The detail of sample taken is tabulated in table No. 8.5

Table No. 8.5

Name of Range	Deodar Kail Working Circle					Fir Spruce Working Circle					Chil Working Circle					Protection Working Circle	G. Total
	PB-I	PB-II	PB-III	PB-IV	Total	PB-I	PB-II	PB-III	PB-IV	Total	PB-I	PB-II	PB-III	PB-IV	Total		
Arsu	1	3	4	3	11	1	1	3	1	5	0	0	2	6	8	68	92
Chowai	10	12	4	4	30	9	4	6	1	20	4	5	0	2	11	82	143
Nither	6	6	1	0	13	1	1	1	0	3	0	0	3	1	4	19	39
Total	17	21	9	7	54	11	6	10	2	28	4	5	5	9	23	169	274

8.8 Stock Maps:

The old stock maps were up-dated on 4" = 1 mile scale after incorporating the changes where necessary.

8.9 Out turn of the sawn timber:

The prescribed conversion %age of sawn timber is 45 % of Deodar & Chil, 40% for Kail and 30% for the Fir/Spruce of the standing volume. It is prescribed that 75% for all conifers in H.P. Forest Manual conversion %age is better in Seraj and Outer Seraj and Kullu. The present day conversion 40-45 % obtained by HPSFDC Ltd. Rampur is 50% for Deodar, 40 % for Kail and Chil and 30% for Fir/Spruce.

8.10 Conversion Factor:

The conversion factors for wood and charcoal have been adopted from the working plan of Mandi-Nachan by Dr. R.V.Singh and is as follows: -

Table No. 8.6

Diameter class of B.L.Trees (Ban Oak)	Yield in Quintals	
	Timber	Charcoal
10-20	1.90	0.32
20-30	3.00	0.50
30-40	8.2	1.20
40-50	12.3	2.00
50-60	18.6	3.10
60-70	22.4	3.77
70 & above.	30.0	5.00

CHAPTER IX

ESTIMATE OF CAPITAL VALUE OF THE FOREST

9.1 General:

It is very difficult to ascertain the exact value of forests especially when intangible benefits derived from these renewable resources are taken into account. However, present capital value has been estimated on the basis of value of land, growing stock of various species and other non timber forest produce.

9.2 Estimation of capital value of land under Forests:

The capital value of land has been arrived at as per order dated 28-3-2008 passed by Hon'ble Supreme Court of India in writ petition No. 202 of 1995 in which the NPV have been fixed. The value applied is an average of eco value class VI, since the forest of this division falls under this eco value. An estimated capital value of forests based on existing average value of eco class applicable for NPV for the land is also estimated. The Capital value is however, subject to variation. The capital value of forests and land as worked out is tabulated in table No: 9.1

9.2.1 Capital value of Forest Land:

Table-9.1

Gradation of the land	Total forest area in hac.	Approximate cost of land per hac.	Total cost (Rs. in crore)
RFs	2076.04	871000	180.82
DPFs (1class)	6590.41	678000	446.83
DPFs (II Class)	16620.55	678000	1126.87
III Class Listed UPF	28412.5	657000	1866.70
Total	53699.50	2884000	3621.23

9.2.2 Capital value of Growing stock: The estimated capital value of the growing stock present in the forest of Anni Forest Division is given in the table below. The estimation has been done on the basis of rates fixed by the pricing committee for the year 2019-20 and as conveyed by the H.P. State Forest Development Corporation for the year 2019-20.

Table-9.2

Sr. No.	Species	Growing stock in m ³	Royalty (in Rs. per m ³)	Total value (in Rs. crores)
1	Deodar	2866100.93	7583	2173.36
2	Kail	981936.26	4106	403.18
3	Chil	1464820.35	809	118.50
4	Fir	974167.06	1370	133.46
5	Spruce	5243246.87	1370	718.32

7	Other miscellaneous B.L.	1510281.49	359	54.22
	Total	13040552.96		3601.06

9.3 Capital Value of Non-Timber Forest Produce:

The main NTFP are medicinal herbs, Guchhi, grass etc. and the income from these minor forest produce in Anni Forest Division is given in the following table. The average value accrued from the NTFP has been based on the average figures for the last 20 years as per information received from Ranges of Anni Forest Division. Their values are tabulated in table No. 9.3.

Table No.-9.3

Sr. No.	Type of produce	App. Estimated value in crores
1	Resin	0.20
2	Medicinal herbs & grasses	0.05
	Total	0.25

9.4 Total Capital Value of the Forests:

Total capital value of the forests works out to be Rs.7222.54 Crore and summarized in table No. 9.4.

Table No.--9.4

Sr. No.	Capital Value of	App. Estimated value in crores
1	Land	3621.23
2	Growing stock	3601.06
3	NTFP	0.25
	Total	7222.54

The above estimate of the capital value of forests includes only tangible benefits such as; production of wood, medicinal herbs grasses etc. It does not include in direct benefits like their significant role in water conservation, stabilization of terrain, influences on local climate and rainfall, aesthetic value and the benefits conferred on agriculture, socio economic support for rural communities. It is not possible to reckon these values in monetary terms.

PART-II

FUTURE MANAGEMENT DISCUSSED AND PRESCRIBED

CHAPTER-I

BASIS OF PROPOSALS

1.1 Introduction:

The forests of Himachal Pradesh play an important role in the economic life of the village communities and are assemblage of versatile natural resources. Forest resources are a vital component to sustain life support system on the earth being the major natural resources and these resources have been exploited by human race since the beginning of civilization. Mankind's indiscriminate use of natural resources in the course of development has led to serious environmental problems and degradation.

The forests of Himachal Pradesh are very important, being an integral part of Himalayan ecosystem. The forests of Himachal Pradesh are not only of importance for the State, but have also a strong influence on the ecology, environment, watershed, climate and bio-sphere of neighboring States of Punjab, Haryana, Utrakhnad, Chandigarh, Delhi and Rajasthan. The forest cover of Himalayas not only regulates the rainfall in the neighboring states but also ensures snow fall in higher mountains and maintain ecological balance. A reduction in the forest cover of the State of Himachal Pradesh will prevent the formation of glaciers and snow, resulting in less water in rivers and lakes and adverse effects on climate, ecology, environment and agriculture production besides harnessing of Hydro Electric Projects in the State of Himachal Pradesh. The forests of Himachal Pradesh have undergone a sea change in the past few decades and are presently under great stress. Forestry in the present time has undergone many changes and there has been a paradigm shift in the approach to the forestry sector nationally and internationally. The focus of management has shifted from production forestry to conservation of biological diversity, restoration of ecological balance of the disturbed areas. Non timber forest produce has become the fore front of forestry management. The role of local people in protection and management of forests through the joint forest management has taken a formal shape. The decentralized planning process for area specific forest management approach has resulted in formulation of micro plans. Watershed development approach is also gaining importance in planning and implementation of natural resource management programme.

1.1.1 National Forest Policy, 1952 and Legislation: The first National Policy of India was enunciated by the government of India in 1894. This policy forms the basis of future management strategies of forest in India. The new National Forest Policy was formulated in 1952, as notified vide Government of India No. 13-1/52-p dated 12th May 1952 and this policy raised on the basic objectives governing the National Forest Policy as under: -

- i) The need for evolving a system of balanced and complementary land use, under which each type of land is allotted to that form of use under which it would produce the most and deteriorated the least.
- ii) Maintenance of environmental stability through preservation, and where necessary, restoration of the ecological balance that has been adversely disturbed by serious depletion of the forests of the country.
- iii) Conserving the natural heritage of the country by preserving the natural forests with vast variety of flora and fauna. Further the National Forestry of India as notified vide Government of India No. 13-1/52-p dated 12th May 1952 was based on the following paramount needs: -

- (a) Denudation in mountainous regions on which depends the perennial water supply of river systems whose basin constitute the fertile core of the country.
 - (b) The erosion progressing along the tree less banks of the great rivers leading to ravine formation and on vast stretches of undulating waste lands depriving the adjoining fields of fertility.
 - (c) The invasion of sea sands on coastal tracts, and the shifting of sand dunes more particularly in the Rajputana desert.
- iv) The need for establishing tree lands where ever possible for the amelioration of physical and climatic conditions promoting the general well being of the people.
 - v) The need for ensuring progressively increasing supplies of grass for cattle, small wood for agricultural implements and in particular of firewood and to get increased quantity of cattle dung for manure to step up food production.
 - vi) The need for sustained supply of timber and other forest produce required for defense, communication and industry.
 - vii) The need for the realization of maximum annual revenue n perpetuity consistent with the fulfillment of the needs enumerated above. To fulfill the aforesaid needs, the following broad principles have been defined in the National Forest Policy.
- (a) To ensure the full protective influence of the forests on the soil, water regime and the physical and climatic factors of the locality.
 - (b) To meet the domestic and agricultural requirements of the local population without subordination of the national interest or the interests of future generations.
 - (c) To combat the indiscriminate extension of agriculture over the forest lands.
 - (d) To regulate and control grazing.
 - (e) To conserve forest resources in perpetuity.
 - (f) To provide protection to the wild life.

1.1.2 National Forest Policy of 1988: The forests policy of 1952 was revised in 1988. The principal aim of the new policy is maintenance of environmental stability and ecological balance through preserving the natural forests. Derivation of direct economic benefit has been subordinated to this principal aim. The policy, for the first time, has given emphasis to the involvement of people, including women, in the protection and development of forests. The salient features of the Forest Policy of 1988 are:

- i) Setting of a national goal to have a minimum of one third of the total land area of the country under forest or tree cover.
- ii) Initiating need-based and time-bound programme for Afforestation and tree planting on all degraded and denuded lands with emphasis on participatory forestry and common property management.
- iii) Increasing productivity of forests through scientific management, based on management plans to be approved by the Government.
- iv) Rights and concessions of the rural people, including that of grazing, to be in accordance with the carrying capacity of the forests; the rights and concessions enjoyed by the tribal and other poor people living within and around forest to be fully protected; minor forest produce and construction timber to be the first charge on forest produce.
- v) Greater emphasis on forest protection and wild life conservation in all management plans.
- vi) Strengthening of forest extension, forestry education and research.
- vii) Supply of forests produce to industries at concessional prices to cease, no forest based enterprise, except at the cottage level, to be permitted in future unless it has been first cleared with regard to assured availability of forest produce; forest based enterprises to raise their own material requirement by establishing direct relationship with individual farmers;

- viii) Creating a massive people's movement with the involvement of women for achieving objectives of the policy.

1.1.3 Himachal Forest Policy: Himachal Pradesh Government has formulated a Forest Policy for the Pradesh vide no. Fts (8)17-5/10 dated 3rd September, 1980. Important features of this policy are as under:

- i) To have 50% of the geographical area of the state under forest by 2000 AD and to raise this percentage to 60% ultimately.
- ii) Felling to be carried strictly in accordance with the prescriptions of sectioned Working Plans and all kinds of removals from the forests to be counted against the prescribed yield.
- iii) Felling to be followed by regeneration.
- iv) No felling up to 30 m on either side of the roads.
- v) All forest areas to be properly demarcated.
- vi) Forests and Revenue Settlements to be taken up simultaneously and the right to be defined and regulated by an Act of Legislation.
- vii) The requirement of local right-holders to be met with judiciously keeping in view the conditions of forests.
- viii) There being hardly any scope for further extension of agriculture, the people should be encouraged to adopt some alternative professions.
- ix) Transfer of areas under reserved, demarcated protected forests and plantations for non-forestry purposes to be totally banned.
- x) Management of water sheds to be given due importance.
- xi) The methodology of planting and standards of protection to be improved to reduce mortality percentage.
- xii) The vast blank stretches in the productive waste lands to be afforested under Social Forestry Programme with appropriate involvement and cooperation of the people especially youth and school children.
- xiii) Planting of fast growing fuel and fodder species to be preferred near habitations to meet the requirements of the local people.
- xiv) Steps to be taken to reduce cattle population rationally, fixing norms of grazing under comprehensive legislation.
- xv) To promote tourism along with improvement of forest vegetation.
- xvi) Shooting of big and small game should be banned in the Pradesh for the development of Wild Life. Game sanctuaries should be established and properly managed all over the State.
- xvii) No lease for the extraction of minerals to be granted without the prior consent of Forest Department.
- xviii) Research facilities to be created in the Forest Department to solve problems of applied nature.
- xix) Co-ordination between the Forest, Animal Husbandry, Agriculture and other concerned Deptt. Will be increased to improve cattle breeds augment fodder development, improve pasture land and promote more livelihood opportunities.
- xx) Watershed programmes will also give due emphasis to grazing and pasture lands.
- xxi) Cropping patterns will be reviewed in the context of climate changes especially for judicious use of water and forest resources in the hill context.

The government of Himachal Pradesh has developed the Forest Sector Policy and Strategy 2005 in consonance with the Government of India Policy guidelines and by making important amendments to the previous HP Forest Policy 1980. The salient features of the **HP Forest Sector Policy & Strategy, 2005** are:

- i) Conserve and improve the status of natural resources in the state, especially forests wildlife and biodiversity through effective watershed management practices.
- ii) Conserve and manage forests scientifically, contemporarily and incorporating the best practices from within and outside the state, for the present and future generations, and to increase their value- historical, culture, religious, economic and aesthetic – for communities and the environment on a sustainable basis.
- iii) Strive for livelihood security of forest department communities through protection of rights to forest goods and services.
- iv) Establish and support an integrated governance system that effectively involves all stakeholders in protecting, conserving, using, managing and restoring forests and other natural resources of the State.
- v) Strive towards an appropriate land use in the state especially in the context of sustainable forest management, focusing on the primary land use sectors such as agriculture, Animal husbandry and those related to infrastructure development.
- vi) Strengthen the capacity for research, training, extension, education and awareness of government and non-government institutions, related to her forest sector.
- vii) Apply the best scientific information, resources, management practices and strategies available to implement the forest sector policy and create a mechanism to periodically review the policy keeping in view the changing circumstances and needs.

The detail HP Forest sector policy & strategy, 2005 on forestry, wildlife watershed, Bio-diversity conservation etc. are available on Govt. of H.P. Forest Department web site www.himachal.nic.in.

1.2 Supreme Court on Green Felling and Regeneration:

The T.N. Godavarman case attracted significant attention when on 12-12-1996 (Copy annexed as **Appendix-XXXIV**); the Apex Court with order ‘Suspended’ the felling of trees in all forest except in accordance with the Working Plans of the State Governments which were approved by the Central Government. The land mark orders passed by the Apex Court in an effort to save the fast diminishing forest cover of the country against the greedy and wanton plundering of its natural resources, on 15-01-1998, the Hon’ble Supreme Court held that Working Plan for all forest divisions shall be prepared by the State Government and get approval from the Govt. of India. Forest working shall be carried out strictly in accordance with the approved prescriptions of the Working Plans.

On 12-5-2001, the Apex Court laid down detailed guidelines for the felling of trees from forest areas as well as non-forest areas including plantation. As per the order the felling of trees from forest areas could be allowed only as per the approved Working Plan/scheme, whereas the felling of trees from non forest area could be allowed only as per detailed guidelines which are prepared by the State Govt. with the concurrence of the Central Government. This order, together with the order of the Apex Court on 15-1-1998 forms the guidelines for felling of trees. The highlights of the order in T.N. Godavarman case dated 12-5-2001 were:

- i) Felling of trees from forest shall be only in accordance with Working Plans/schemes or felling schemes approved by the Ministry of Environment and Forests.
- ii) Such Working Plans/schemes shall also be needed for felling of trees from any non-Govt. forest areas including land which is required to be treated as “forest” as the decision of the Apex Court on 12-12-1996.
- iii) While implementing the Working Plans/schemes approved by the Central Govt., the State Govt. or the concerned authority shall ensure that no felling is done unless and until sufficient budgetary provisions exist for the regeneration of such areas.

- iv) For felling of trees from non forest areas, including plantations on concerned State Govt. which will come in force only after concurrence from the MOEF, Govt. of India.
- v) The Guidelines/Rules shall also include provisions for penalties and mode of disposal in respect of any felling done in violation of such rules/guidelines.
- vi) Till such guidelines/Rules become effective no felling from any area other than that under approved Working Plans/schemes or felling schemes shall be permitted.
- vii) The schemes are to be prepared within a period of three months and the MOEF has to take a decision on the same within a period of one month of the date of receipt.

For the State of Himachal Pradesh, the **Hon'ble Supreme Court's order dated 12-12-1996** held that there will be no felling of trees permitted in any forest, public or private. This ban will not affect felling in any private plantation comprising of trees planted in any area which is not a "forest", and which has not been converted from an earlier "forest". This ban will not apply to permits granted to the right holders for their bonafide personal use. Further in a forest, the state Government may either departmentally or through the state Forest Corporation remove fallen tree or fell and remove diseased or dry standing timber from areas other than those notified under section 18 or section 35 of the Wild Life Protection Act, 1972 or any other act banning such felling or removal of trees. For this purpose, the state Government is to constitute an Expert Committee comprising a representative from MOEF, a representative of the state government two private experts of eminence and the MD of the State Forest Corporation (as Member Secretary), who will fix the qualitative and quantitative norms for the felling of fallen trees and diseased and standing timber. The state shall ensure that the trees of felled and removed are in accordance with these norms. Felling of trees in any forest of any clearance of forest land in execution of projects shall be strict conformity with the Forest Conservation Act, 1980 and any other laws applying thereto. Moreover, any trees so felled, and the disposal of such trees shall be done exclusively by the state Forest Corporation and no private agency is to be involved in any aspect thereof. There is also a complete ban on Oak trees.

Again, immediately two questions arise for consideration in the Hon'ble Supreme Court in T.N. Godavarman Thirumulpad V. Union of India, IA 424 in WP (c) No. 202/95 dated 8-1-2001. One is with regard to the implementation of the Working Plans in so far as felling is concerned and the Second is with regard to the regeneration of forests. It is quite obvious that the two activities must co-exist. There cannot be felling without regeneration because that will over a period of time only result in the forests vanishing. There has been shortfall with regard to the regeneration and as a result thereof forest cover is depleting. That shortfall has to be made up and for the future such felling has to be done which will ensure that there is at least no further depletion of the forest cover, and the targets for increase in forest cover, as contemplated in the Working Plans, are met. In other words, regeneration should be commensurate with the felling, and to the extent stipulated in the Working Plan.

Keeping in view of the aforesaid reason and the National Working Plan code, MOEF, Govt. of India, March, 2014, the present Working Plan has been revised thoroughly notwithstanding the present moratorium on green felling the revised Working Plan includes all regular Working Circles prescribing yield and felling cycles, depending on the condition of the forests in each Working Circles. This green felling in any forest or in public forest will be allowed/carried out strictly in accordance with the approved prescription of the Working Plan subject to the decision of the Hon'ble Supreme Court.

1.3 Objectives of management:

As per National Working Plan Code 2014, the main objective of forest management should be more people centric and oriented to provide the goods and services from forest on sustainable basis with an emphasis on ecological services and harvest of usufructs as well. The general objectives of management of forests of Anni Forest division are as under:-

- i) To improve the stocking of the forest and to bring them gradually to a condition as near to the normal as possible by obtaining a more normal distribution of age classes with normal regeneration and normal density of stocking. Also to restock the blank and barren land with valuable native tree species suitable to locality, through artificial means.
- ii) To conserve biodiversity and natural habitat through preservation of natural forest with vast variety of flora and fauna
- ii). To preserve the hill sides against denudation and erosion so as to ensure equitable flow of water in the streams and rivers that originate from these hills.
- iii). To improve moisture regime of soil, maintain water table and recharge ground water through watershed management.
- iv). To conserve, sustain, protect and improve the quality and stocking of the existing forests and regeneration as near normal as possible through participatory forest management.
- v). To fulfill the legitimate and bonafide domestic and agricultural requirements of the local people especially for timber, fuel, grass and grazing and other forest produce subject to the silvicultural carrying capacity of the forests.
- vii). To ensure systematic development and exploitation of Non-Timber Forest Produce that is found in the tract and to increase their productivity by artificial means wherever possible.
- viii) To identify fauna which is getting extinct or dwindling fast in numbers and suggest measures aiming at conservation & rehabilitation of natural habitat along with combating man-Animal conflict.
- ix) To increase the size of carbon sinks so as to reduce green house effect.
- x) To improve and maintain the forest fringe areas of the tract. As well as the trees outside forests (TOF) which are located on the land other than forest.
- xi) In consistent with above, to obtain maximum sustained annual yield of timber and other forest produce.
- xii) To improve and conserve the genetic resources (both floral and faunal including microorganism) and their sustainable use.
- xiii) To protect & detect encroachment and illegal mining on forest land through effective enforcement of law and rules.
- xiv) To raise wild fruit trees plantations to augment the food base to wild Animals and birds including potential bio-fuel species promoted.
- xv) To systematically convert the Eucalyptus plantations raised during the past with more valuable species.
- xvi) Nature based tourism will be promoted in Forest areas having such potential and Eco-tourism societies as another institutional mechanisms will be established for sustaining it.
- xvii) Survey, measurement and demarcation with boundary/ pillars of the III Class Forests (Undemarcated Protected Forests) and their entry in revenue records. Entries of forest already declared as Reserve, I Class and II Class Demarcated Protected Forests in revenue records will be revisited and confirmed.
- xviii) Appropriate educational, extension and training programmes to create great awareness of the causes and ill effects of forest fires will be undertaken and people participation will be encouraged and motivated to reduce fire incidences.

1.4 Methods of Treatment to be adopted:

To achieve the above objectives of management, the following treatment and methodology will be followed:

- i) All the conifer forests which are on comparatively moderate slopes will be managed under Punjab Shelter wood System. The mode of regeneration will be both natural and artificial ensuring the completion of regeneration of the blank areas within the currency of plan and there shall be no felling of tree in any forest area except in accordance with the orders given by the Apex Court.
- ii) The riparian zones among the most diverse, productive, vulnerable, habitat and perform several critical ecological functions. The habitat use pattern in this system by the people is often unsustainable hence the riparian zones are constantly under threat. No fellings along the bank, nalla or streams or riparian zone will be allowed and necessary preventing measures will be taken during the plan period.
- iii) To conserve and improve the status of natural resources and bio-diversity through effective water shed management practices.
- iv) All poorly stocked and blank forests will be re-afforested by planting suitable species to meet local demand of fuel, fodder, timber and demand of forest based industries.
- vi) Participation of community will be ensured in the process of management, protection and conservation through the concept of Joint Forest management.
- vii) Working with the local communities to maintain ecological balance for the preservation and improvement of wild life especially in and outside the protected area.
- viii) Soil conservation works with focus on water shed management in a planned manner, where ever necessary will be undertaken to protect hill side/slopes from further denudation & erosion through vegetative manner.
- ix) Survey, measurement & demarcation of forest land will be ensured under the provision of the HP Land revenue Act, 1954 and construction of Boundaries/Pillars would be taken place in planned manner.
- x) Encroachment on forest land will be detected and prosecuted in planned.

1.5 Constitution of Working Circles:

The Forest is no more considered as a source of Timber yielding but is now considered as indispensable for every human survival. It is also now considered as neutral agent for carbon sequestration and carbon deposition. It is most effective tool for controlling global warming and eventual climatic change.

Keeping in view the objects of managements out lined above, the following Working Circles have been constituted:

- 1. The Deodar- Kail Working Circle.**
- 2. The Fir / Spruce Working Circle.**
- 3. The Chil Working Circle.**
- 4. The Protection Working Circle.**
- 5. The Eucalyptus Plantation (Overlapping) Working Circle.**
- 6. The Plantation (Overlapping) Working Circle.**
- 7. The NTFP (Overlapping) Working Circle.**

8. **The Forest Protection overlapping Working Circle (Overlapping) to all working circle, viz Fire, Illicit felling, Encroachment, Illegal mining and Poaching etc.).**
9. **The Joint Forest Management/ Participatory Forest Management (Overlapping) Working Circle.**
10. **The Wild life Management (Overlapping) Working Circle.**

The areas suggested to be constituted in these Working Circles are tabulated in table No: 1.1.

Table 1.1

Sr. No.	Name of WC	Protected Forest				Total
		(Area in Hac.)				
		RFs	I Class DPFs	II Class DPFs	III Class DPFs	
1	Deodar/Kail	312.41	1839.37	30.35	0	2182.13
2	Fir/Spruce	144.06	1334.25	1157.01	0	2635.32
3	Chil	0	751.91	145.28	0	897.19
4	Protection	1619.57	2664.88	15287.91	28412.50	47984.86
Total		2076.04	6590.41	16620.55	28412.50	53699.50

1.5.1 The Deodar Kail Working Circle: This Working Circle consists of most valuable and important Forests of Deodar and Kail and includes all RFs, Ist & IInd Class DPFs, containing Deodar and Kail having more than 60% of Deodar and Kail as major species, situated on comparatively easy ground and small admixture of Spruce and Fir in upper reaches. This working circle is almost same as was in the Negi's Plan. These forests are not even aged and generally contain all age classes more or less intimately mixed up except in the areas regenerated during the past. More stress shall be laid on regenerating the felled/open areas within the shortest possible time and to regenerate the areas allotted to P.B.I fully within the regeneration period of 30 years. The forests will be managed under Punjab Shelter wood System. The emphasis will be laid on natural regeneration supplemented with artificial regeneration. No discrimination will be made between different species coming up naturally in the felled areas.

1.5.2 The Fir/ Spruce Working Circle: All the forests containing predominately Fir and Spruce with little admixture of deodar and Kail at the low elevation and broad leaved species along nalla and depressions has been allotted to the Working Circle. The basic constitution of this Working Circle will remain same as in the previous Negi's Plan. The forest shall be worked under Punjab Shelter wood System. Most of the forest allotted to this Working Circle, have been felled in the past for apple packing cases. Fellings done in the past in the majority of the areas have not been followed by regeneration. Emphasis will be laid to regenerate PB-I areas by artificial means as quickly as possible with in the regeneration period of 30 years in a time bound manner. The conversion of uneven aged crop to even age will continue.

1.5.3 The Chil Working Circle: This Working Circle includes all RFs, Ist & IInd Class DPFs containing Chil as pure crop or 60% of Chil as major species. The defective resin tapping during the past and wind damage has turned these areas to blank. The forests are uneven aged and contain all the age classes. It is also found mixed with other species in some areas. These forests shall be worked under Punjab Shelter wood System. Regeneration will be obtained naturally and supplemented with artificial regeneration. More stress shall be laid on regenerating the felled/open areas within the shortest possible time and to regenerate the areas allotted to P.B.I fully within the regeneration period of 30 years.

1.5.4 The Protection Working Circle: This Working Circle includes all the coniferous, broad leaved forests which lies on precipitous and difficult terrain and cannot be managed under Shelter wood System and thus not included in the other working circles described above. Moreover, these Forests are mainly situated on difficult, steep and precipitous slopes where concentrated fellings are not advisable due to environmental hazards and regeneration problems. It also includes all the forests which were earlier in the Improvement Working Circle of expired Negi's Plan having also been included in the Protection Working Circle. The blanks and other degraded areas are to be rehabilitated by planting species suitable to the area. The chief value of these forests lies in the protection of hill side against denudation and erosion and in maintaining a green cover. The difference of areas in this working circle is on account of shifting the forest areas from the Improvement Working Circle of the plan under revision.

1.5.5 The Eucalyptus Plantation (Overlapping) Working Circle: This Working Circle includes all the I Class DPF and mostly IIIrd Class Forests in which Eucalyptus Plantation were carried out during 1960 & 1970 and overlaps with Protection Working Circle. These areas need to be replaced with more valuable species suitable to the locality. The special objectives of management of this Working Circle are:

- (i) To develop and augment the forests resources of the area by Afforestation of blank and replacement of more valuable species besides protecting the existing stock of Eucalyptus. Further to convert systematically the Eucalyptus Plantations areas by afforesting suitable valuable species.
- (ii) To conserve soil and water through Afforestation.
- (iii) To rehabilitate degraded forests.

1.5.6 The Plantation (Overlapping) Working Circle: This Working Circle includes mostly IIIrd Class Forests and the areas which are devoid of vegetation, having open crop or have young plantations or crop which still requires protection. Beside this, the blank areas and poorly stocked but are suitable for raising plantation of value-able and economically important species have also been included in this working circle. The plantations raised in the III Class and I & II Class Forests in the past which are not fully established are also included in this circle. The special objectives of management of this Working Circle are:

- (i) To develop and augment the forests resources of the area by Afforestation of blank and scrub areas with suitable species.
- (ii) To conserve soil and water through Afforestation.
- (iii) To rehabilitate degraded forests.
- (iv) To eradicate Invasive Alien Species from forest ecosystem and restore their productivity and biodiversity values

1.5.7 The NTFP (Overlapping) Working Circle: This is an overlapping Working Circle and is constituted to ensure systematic development and exploitation of Non-timber Forest Produce species that occur or can be introduced in this division. It will include all the areas which have high potential for raising NTFP through natural or artificial regeneration techniques. The main non timber forest produce found/extracted in the division are mostly medicinal plants, Resin and grass.

1.5.8 The Forest Protection (Overlapping) Working Circle (Fire, Illicit felling, Encroachment, Illegal mining & Poaching etc.): This is an overlapping Working Circle and is constituted to address the forest protection problems like (Fire, Illicit felling, Encroachment, boundary pillars, Illegal mining, Poaching etc.) in this division. This Working Circle includes the areas of all the other Working Circles. The forest areas which are vulnerable to encroachments, status of damage reports, progress in prosecution/ compounding, disposal of seized timber and illicit felling etc. along with their future strategies are also discussed in detail under this Working Circle.

1.5.9 The JFM/ PFM (Overlapping) Working Circle: This Working Circle includes the forest areas near to the habitations, where active participation of local people has been taken in the past along with potential new areas. Involvement of rural communities living close to forests in protection and management of forest resources is enshrined in the National Forest Policy 1988 and as well as in the National Working Plan Code 2014. The experience gained from various projects like social forestry umbrella project, Sanji Van Yojna etc. have been incorporated to enlist the potential panchayat/villages where JFPM approach can be successfully implemented. The selected forests areas are mostly IIIrd Class and Ist & IInd Class DPFs situated near to habitations that have become degraded. The areas under Japan International Cooperation Agency (JICA) project which is also being implemented in this Division have also been included in this Working Circle.

This Working Circle also lays emphasis on man-forest interface and channelizing human resources for conservation of forests and vice versa. People of the division depend on Ban / Mohru oak forests for fodder on a large scale. In the process, most of these oak forests have been lopped with high intensity leaving the oak trees at the verge of perishing. It is, therefore, suggested in this Working Circle about the needs of these people and sustainable utilization of the Oak forest for fodder with active participation of local communities.

1.5.10 The Wild Life Management (Overlapping) Working Circle: This Working Circle is constituted for emphasizing the necessity of conservation of wildlife and collection of information for better management of wild life. The whole tract has a variety of wild Animals and birds since the forests are distributed from low elevation to the high snow bound areas. The provisions of the wild life protection act, 1972 are to be enforced and the man Animal, conflict reduced. Therefore, this Working Circle overlaps all other Working Circles.

1.6 Working Circle, their area and distribution:

The detail of forests, Reserve Forests, Ist Class Demarcated, II Class Demarcated and III Class Forests allotted to various Working Circles along with their areas are given in **Appendix No.II**. The total area in hac, Working Circle wise and their distribution range wise is tabulated in table No: 1.2

Table-1.2

Sr. No.	Name of Range	DKWC (Hac.)	FSWC (Hac.)	CWC (Hac.)	PWC (Hac.)	G. Total (Hac.)
1	Arsu	366.23	647.49	433.01	23581.92	25028.65
2	Chowai	1291.64	1598.52	393.77	13645.73	16929.66
3	Nither	524.26	389.31	70.41	10757.21	11741.19
	Total	2182.13	2635.32	897.19	47984.9	53699.50

1.7 Reasons for Constitution of Working Circle:

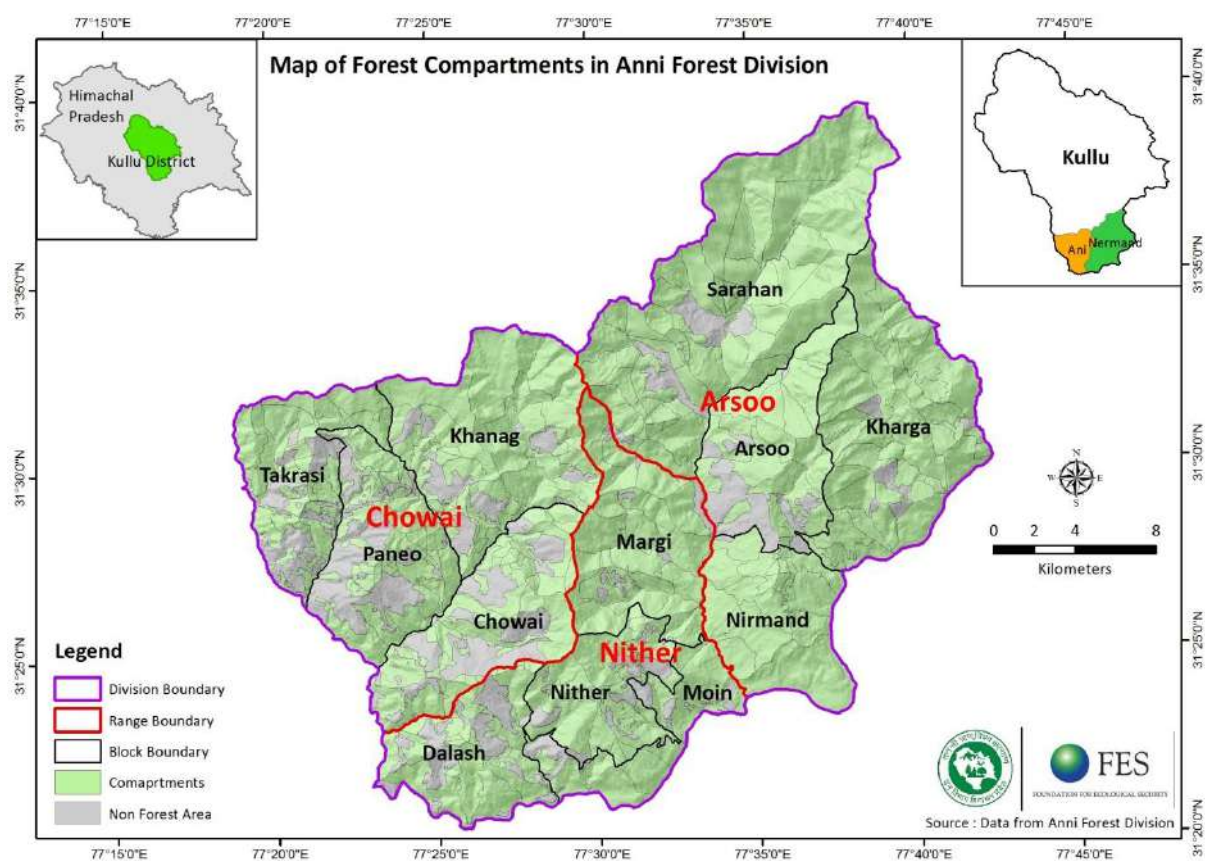
The coniferous forests are silviculturally suited for regeneration under a system of concentrated regeneration felling and the overriding factor for allotting those workable areas as lie on comparatively easy ground to Deodar and Kail Working Circle. In the case of Fir Working Circle, for regeneration, under the system is necessity for closure against grazing. Even otherwise, too, it is silvicultural treatment of the forests as on largely on moderate slopes which are conveniently suited for treatment under a system of concentrated regeneration fellings. The experience during the past Working Plan has been that the Punjab Shelter wood System along with supplementing the natural regeneration by artificial means combined with closure of areas under regeneration has been most successful. The experience of managing the over mature Fir forests under clear felling system has proved the failure because of immense weed growth that comes up after the opening up of the forests under clear felling system.

The separate Working Circle for Deodar, Kail, Fir Spruce and Chil have been created on the basis of physiographic, growing stock, managerial requirements to meet specific objectives as enlisted in detail in the respective chapter ahead.

The fellings are to be linked with the pace of regeneration. Sufficient nursery should be raised in advance before carrying out the regeneration felling.

1.8 Blocks and Compartments:

All the forests have been divided into compartments and sub-compartments based on the natural features, composition of crop and treatment required. No further division is required. Invariably the natural features like ridges, nallas and path etc. form the boundaries.



The nomenclature/numbering of the forests have not been changed and kept as such. Similarly all the number/nomenclature of III Class Forests has also not been changed. The range wise detail of these areas is given in **Appendix-I**.

1.9 Enumerations:

As given in the Chapter VIII of Part I and under paragraph 8.7 the enumeration was carried out on the grid system bases in the Sample IDs (Plots) of size 0.1 Ha each. The whole of the area of the Anni Forest Division was divided into grids and total 274 Nos of samples were taken. The enumeration was carried out with the help of GPS 72, Compass, Haga Altimeter and Callipers. Sampled enumerations have been carried out in all the forest. Accordingly complete enumerations have been carried out in the selected sample plot of size 0.1 hac in the forests after selecting the samples. The results have been analyzed; growing stock has been assessed and extrapolated. The results of enumerations are given in **Appendix-VI, VII, VIII & IV**. The growing stock has been assessed / extrapolated and is given in **Appendix-X, XI, XII & XIII**.

1.10 Stock Mapping:

The stock maps of all the forests have been taken from survey sheets 4" = 1 miles and have been placed in the respective compartment history file.

1.11 Felling series:

There will be only one felling series i.e. Sutlej felling series conforming to the territorial jurisdiction of Anni forest Division.

1.12 Period of Working Plan and necessity for intermediate revision

Sh. Shamsher Singh Negi's working plan from 1996-97 to 2011-12 and extended up to 2014-15.

Sh. Shamsher Singh Negi's Plan was for the period of 1996-97 to 2011-12 and was further extended up to 2014-15. During the year 2015-16 to 2021-22, all operations/activities have been carried out as per APO. No felling except that of salvage removal of forests has been carried out in compliance of the Hon'ble Supreme Court's order dated 12-12-1996. Felling of trees or clearance of forest land in execution of projects has been carried out strictly in conformity with Forest (Conservation) Act, 1980. Hence, period of 4 years has been treated as interim period and regularized. The period of Working Plan is 10 years from 2022 to 2032 during the period, the prescription of this Working Plan will come into force w.e.f. 01-04-2022. The effective period of the plan shall 10 years. As per guidelines and Working Plan Code, 2014, mid-term review shall be carried out after five years for mid-course correction by the consultative committee under the chairmanship of PCCF (HoFF) with representation from RAPCCF (MoEF). However, there is no necessity of intermediate revision is anticipated until and unless there is any major changes in Administrative Policy and in compliance of the Hon'ble Supreme Court's order or natural calamity on large scale.

CHAPTER II

THE DEODAR-KAIL WORKING CIRCLE

2.1 General Constitution:

This Working Circle includes all the RFs, Ist Class & IIInd DPFs, having Deodar and Kail as principle species or the crop having 60% or more of these species as its component in a compartment situated on comparatively easier/moderate to steep slopes. This working circle includes all the forests of Deodar Kail working circle of Negi's Working Plan. This Working Circle covers an area of **2182.13Ha**.

2.2 General Character of Vegetation:

The Forests included in this working circle are generally situated near the habitations and contain Deodar and Kail crop often mixed with varying proportions. The detailed description of the forests is given and described in the Chapter II-A, Part- I. The forest of this Working Circle falls under type Group 12 (Himalayan Moist Temperate Forest) and sub type 12/C.I.c of the forest types given by **Champion and Seth**. The overall condition of the crop varies from young to middle and few mature trees. The Forests are uneven aged of moderate density consisting of Deodar and Kail in most their distribution. The Chil occupies the lower most elevation in the area, while the Silver Fir and Spruce are found in the higher reaches. The natural regeneration in these forests especially of kail is very good, compared to deodar except in the areas where the incidence of grazing is very high. The small scattered patches of other species like Spruce, Broad leaved and in rare cases Fir species interrupts the purity of the vegetation and it is not practicable to isolate them in each and every compartment, even though effort have been made to do so. In some areas fire has created blanks. Kail is also rapidly losing ground owing to the damage caused to it by fires. Ever since the introduction of scientific management in these forests Deodar has been the prized species. Selective and indiscriminate fellings by right holders has also caused extensive damage to these forests. Infections of blue pine trees near habitations with *Tremetes pini* fungus and an angiosperm parasite *Arceuthobium minutissimum* are very common.

The crop is generally uneven aged except for those forests which have been successfully regenerated over the past under various Working Plans. The crops are fairly stocked except on a steep ground and habitation where unsilvicultural marking have created large gaps due to heavy pressure of TD marking. The Deodar forest in the track conform II/III of the FRI quality classes.

2.3 Special objects of Management:

Without prejudice to general objects of managements of the forests, the special objects of managements of this Working Circle are:

- (i) To progressively convert the irregular/uneven aged stock into more or less even aged/normal stock and thus to build up growing stock to the extent possible under the prevailing conditions.
- (ii) To improve the existing condition of crop with selective and specific treatments.
- (iii) To regenerate the PB-I areas as speedily as possible by resorting to artificial regeneration wherever necessary.
- (iv) To obtain the maximum possible sustained yield of timber without further denuding/worsening the condition of vegetation.

- (v) To protect the forests from fires as well as biotic interferences.

2.4 Area Statement:

The total area of this Working Circle **2182.13 hac.** which works out to **4.06 %** of the total area of the division. The range wise distribution of these forests is given in table No. 2.1.

Table 2.1

Name of Range	Area in Hac.				
	RFs	DPFs I Class	DPFs II Class	III Class	Total
Arsu	112.09	254.14	0	0	366.23
Chowai	185.35	1075.94	30.35	0	1291.64
Nither	14.97	509.29	0	0	524.26
Total	312.41	1839.37	30.35	0	2182.13

The forest wise detail of specific allotment is given in **Appendix No.-I.**

2.5 Block and Compartment:

The compartments and sub compartments remains unchanged from the Negi's Working Plan under revision.

2.6 Felling Series:

There will be only one felling series i.e. **Sutlej felling series**, conforming to the territorial jurisdiction of Anni Forest Division.

2.7 Analysis and Valuation of the Crop:

Except for the converted crop during the period of previous plans (before the ban on green felling) the crop is irregular having all the age classes in the same areas. The converted crop, however, is generally well stocked having more or less represented almost generally in mixtures and sometimes as pure crops of Deodar and Kail separately. Spruce and Fir are found in the higher reaches of the compartment bearing Deodar and Kail. The broad leaved species are confined to depressions and along nallas.

(i) Stock Maps: stock maps on 4"=1 Miles scale; have been prepared for all the forests separately.

(ii) Density: The crown density of each compartment has been estimated occularly and has been recorded in respective compartment history files. The average density of the crop varies from 0.3 to 0.5.

(iii) Site quality: The site quality of the crop varies from place to place overall quality conform to II/III of the FRI quality classes. The site quality of individual compartments/ sub compartment has been indicated in the compartment history files.

(iv) Age Classes: The crop is very irregular. All age classes are represented and the crop is seldom uniform over large areas.

(v) Enumerations: As given in the Chapter VIII under paragraph 8.7, sampled enumerations has been carried out. The enumeration was carried out on the grid system bases in the Sample IDs (Plots) of size 0.1 Ha each. Total **54** Nos. Sample plots pertaining to this working circle were enumerated. The detailed forest wise enumeration results are given in **Appendix-VI**. The results have been analyzed statistically and growing stock has been assessed / extrapolated.

Table- 2.2

PB-I (Area in Ha. = 731.20)														
Species wise No. and Volume in m3. (Estimated / Extrapolated growing stock) for Deo / Kail Working Circle														
Sr. No	Species Code	Species		10-20 V	20-30 IV	30-40 III	40-50 IIA	50-60 IIB	60-70 IA	70-80 IB	80-90 IC	90-100 ID	100 over IE	Total
1	241	Deodar	Number	19355	36130	49464	35700	26667	9893	3011	430	3011	860	184520
			Volume in m3	1138.09	5058.18	20774.68	45338.70	64268.18	35007.28	14482.06	2619.42	21316.63	6090.47	216093.69
2	926	Kail	Number	11613	5592	1720	3871	5161	5161	2581	860	1720	0	38280
			Volume in m3	696.79	782.81	722.60	4916.24	12439.00	18271.40	12413.20	5238.83	12180.93	0.00	67661.81
3	929	Chil	Number	0	3011	6022	2581	430	430	0	0	0	0	12473
			Volume in m3	0	421.52	2529.09	3277.50	1036.58	1522.62	0.00	0.00	0.00	0.00	8787.30
	2	Fir	Number	0	860	0	430	430	2151	0	0	0	0	3871
			Volume in m3	0	120.43	0.00	731.20	1337.67	10968.00	0.00	0.00	0.00	0.00	13157.30
4	921	Spruce	Number	5592	10753	9893	3871	3011	1720	430	430	860	0	36560
			Volume in m3	335.49	1505.41	8408.80	6581.23	9363.66	7918.47	3045.23	3651.70	8034.60	0.00	48844.59
5	1162	Taxus	Number	0	1290	4301	0	0	0	0	0	0	0	5592
			Volume in m3	0.00	301.94	2008.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2310.59
6	965	Bird cherry	Number	860	0	430	0	430	0	0	0	0	0	1720
			Volume in m3	67.96	0.00	301.08	0.00	946.26	0.00	0.00	0.00	0.00	0.00	1315.30
6	19	Maple	Number	0	0	860	0	0	0	0	0	0	0	860
			Volume in m3	0.00	0.00	602.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	602.16
7	38	Bascules	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
8	1006	Mohru Oak	Number	430	1290	1290	1290	0	860	430	430	0	0	6022
			Volume in m3	57.64	387.11	1290.35	2322.64	0.00	3957.08	2709.74	3440.94	0.00	0.00	14165.49
9	1038	Rhododendron	Number	0	860	1290	0	0	0	0	0	0	0	2151
			Volume in m3	0	252.91	913.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1166.48

	2000	Other B/L	Number	0	0	430	0	0	0	0	0	0	0	430
			Volume in m3	0	0.00	304.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	304.52
		G Total	Number	37850	59786	75701	47743	36130	20216	6452	2151	5592	860	292480
			Volume in m3	2295.97	8830.32	37855.51	63167.51	89391.35	77644.84	32650.23	14950.89	41532.16	6090.47	374409.24

PB-II (Area in Ha. = 757.34)

Species wise No. and Volume in m3. (Estimated / Extrapolated growing stock) for Deo / Kail Working Circle

Sr. No	Species Code	Species		10-20 V	20-30 IV	30-40 III	40-50 IIA	50-60 IIB	60-70 IA	70-80 IB	80-90 IC	90-100 ID	100 over IE	Total
1	241	Deodar	Number	31015	25605	40031	33179	21278	10819	7573	2885	1082	0	173467
			Volume in m3	1860.89	3584.74	16812.95	42136.96	51279.13	38299.77	37246.70	17570.29	7659.95	0.00	216451.38
2	926	Kail	Number	10098	8295	5049	3967	2885	2164	361	361	0	0	33179
			Volume in m3	605.87	1161.25	2120.55	5038.11	6953.10	7659.95	1734.67	2196.29	0.00	0.00	27469.80
	929	Chil	Number	361	0	721	721	0	0	0	0	0	0	1803
			Volume in m3	21.64	0.00	302.94	916.02	0.00	0.00	0.00	0.00	0.00	0.00	1240.60
3	2	Fir	Number	361	1082	721	361	0	0	0	0	0	0	2524
			Volume in m3	22	151	613	613	0	0	0	0	0	0	1399
4	921	Spruce	Number	2885	2524	2524	1082	1082	1443	1082	0	0	0	12622
			Volume in m3	173.11	353.43	2145.80	2347.75	4082.42	8071.08	8168.45	0.00	0.00	0.00	25342.04
5	1162	Taxes	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
6	965	Bird cherry	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
7	19	Maple	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
8	38	Aescules	Number	0	0	0	0	0	0	0	0	0	0	0

			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
9	1010	Ban oak	Number	1803	0	721	0	0	0	0	0	0	0	2524
			Volume in m3	241.63	0.00	473.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	715.51
10	1017	Kharshu Oak	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
11	1006	Mohru Oak	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
12	1038	Rhododendron	Number	1443	0	0	0	0	0	0	0	0	0	1443
			Volume in m3	135.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	135.60
13	2000	Other B/L	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
		G.Total	Number	47965	37506	49768	39310	25245	14426	9016	3246	1082	0	227563
			Volume in m4	3060.37	5250.89	22469.20	51051.93	62314.66	54030.80	47149.82	19766.57	7659.95	0.00	272754.20

PB-III (Area in Ha. =374.31)														
Species wise No. and Volume in m3. (Estimated / Extrapolated growing stock) for Deo / Kail Working Circle														
Sr. No	Species Code	Species		10-20 V	20-30 IV	30-40 III	40-50 IIA	50-60 IIB	60-70 IA	70-80 IB	80-90 IC	90-100 ID	100 over IE	Total
1	241	Deodar	Number	18300	6239	12477	13309	13309	5823	1248	1664	0	0	72367
			Volume in m3	1097.98	873.39	5240.34	16902.18	32074.21	20612.00	6001.44	10131.32	0.00	0.00	92932.86
2	926	Kail	Number	4991	2495	2495	1664	2495	416	0	0	0	0	14557
			Volume in m3	299.45	349.36	1048.07	2112.77	6013.91	1472.29	0.00	0.00	0.00	0.00	11295.84
3	929	Chil	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
4	2	Fir	Number	0	832	0	0	0	416	0	0	0	416	1664

			Volume in m3	0.00	116.45	0.00	0.00	0.00	2121.09	0.00	0.00	0.00	3884.51	6122.05
5	921	Spruce	Number	3327	1664	832	0	416	0	1248	0	0	832	8318
			Volume in m3	199.63	232.90	707.03	0.00	1293.45	0.00	8833.72	0.00	0.00	7769.01	19035.74
6	1162	Taxus	Number	832	0	832	0	0	832	416	0	0	0	2911
			Volume in m3	86.51	0.00	388.45	0.00	0.00	1617.85	1137.07	0.00	0.00	0.00	3229.88
7	965	Bird cherry	Number	0	0	1664	0	0	0	0	0	0	0	1664
			Volume in m3	0	0	1164.52	0	0	0	0	0	0	0	1164.52
8	19	Maple	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
9	651	Walnut	Number	0	0	0	0	416	416	832	416	0	416	2495
			Volume in m3	0	0	0	0	1039.75	1580.42	4242.18	2994.48	0	4699.67	14556.5
10	38	Aescules	Number	0	0	0	415.9	0	0	0	0	0	0	416
			Volume in m3	0.00	0.00	0.00	555.64	0.00	0.00	0.00	0.00	0.00	0.00	555.64
11	1010	Ban oak	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
12	1017	Kharshu Oak	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
13	1006	Mohru Oak	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
14	1038	Rhododendron	Number	0	416	0	0	0	0	0	0	0	0	416
			Volume in m3	0	122.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	122.27
15	2000	Other B/L	Number	0	416	0	0	0	0	0	0	0	0	416
			Volume in m3	0	122.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	122.27
		G.Total	Number	27449	12061	18300	15388	16636	7902	3743	2080	0	1664	105223
			Volume in m3	1683.56	1816.65	8548.41	19570.59	40421.32	27403.65	20214.40	13125.80	0.00	16353.19	149137.58

PB-IV (Area in Ha. = 319.28)														
Species wise No. and Volume in m3. (Estimated / Extrapolated growing stock) for Deo / Kail Working Circle														
Sr. No	Species Code	Species		10-20 V	20-30 IV	30-40 III	40-50 IIA	50-60 IIB	60-70 IA	70-80 IB	80-90 IC	90-100 ID	100 over IE	Total
1	241	Deodar	Number	11859	10035	20069	22806	17332	14140	2737	1824	1824	0	102626
			Volume in m3	711.54	1404.83	8428.99	28963.26	41770.95	46824.69	15357.37	11110.94	12917.16	0.00	167489.73
2	926	Kail	Number	0	0	456	0	456	456	456	456	0	0	2281
			Volume in m3	0.00	0.00	191.57	0.00	1099.24	1614.64	2193.91	2777.74	0.00	0.00	7877.09
3	929	Chil	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
4	2	Fir	Number	0	456.1	0.0	456.1	0.0	1368.3	0.0	0.0	456.1	0.0	2736.7
			Volume in m3	0	63.86	0.00	775.39	0.00	6978.55	0.00	0.00	4260.11	0.00	12077.91
5	921	Spruce	Number	0	456	2281	1368	456	2737	1824	0	456	0	9578
			Volume in m3	0	63.86	1938.49	2326.18	1418.52	13957.10	12917.16	0.00	4260.11	0.00	36881.40
6	1162	Taxus	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
7	965	Bird cherry	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
8	19	Maple	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
9	651	Walnut	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
10	38	Aescules	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
11	1010	Ban oak	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
12	1017	Kharshu Oak	Number	0	0	0	0	0	0	0	0	0	0	0

			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
13	1006	Mohru Oak	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
14	1038	Rhododendron	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
15	2000	Other B/L	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
		G.Total	Number	11859	10947	22806	24630	18245	18701	5017	2281	2737	0	117221
			Volume in m3	711.54	1532.54	10559.05	32064.83	44288.70	69374.98	30468.43	13888.68	21437.37	0.00	224326.13

Table No. – 2.3

Yield Calculation Table Growing Stock in PB-I & PB-IV

PB-I & PB-IV (Area in Ha. =1050.48)														
Species wise No. and Volume in m3. (Estimated / Extrapolated growing stock) for Deo / Kail Working Circle														
Sr. No	Species Code	Species		10-20 V	20-30 IV	30-40 III	40-50 IIA	50-60 IIB	60-70 IA	70-80 IB	80-90 IC	90-100 ID	100 over IE	Total
1	241	Deodar	Number	31214	46164	69533	58505	44000	24032	5748	2255	4835	860	287146
			Volume in m3	1849.63	6463.02	29203.67	74301.96	106039.13	81831.97	29839.43	13730.36	34233.79	6090.47	383583.41
2	926	Kail	Number	11613	5592	2177	3871	5618	5618	3037	1316	1720	0	40561
			Volume in m3	696.79	782.81	914.17	4916.24	13538.24	19886.04	14607.11	8016.57	12180.93	0.00	75538.90
3	929	Chil	Number	0	3011	6022	2581	430	430	0	0	0	0	12473
			Volume in m3	0.00	421.52	2529.09	3277.50	1036.58	1522.62	0.00	0.00	0.00	0.00	8787.30
4	2	Fir	Number	0	1316	0	886	430	3519	0	0	456	0	6608
			Volume in m3	0.00	184.29	0.00	1506.59	1337.67	17946.55	0.00	0.00	4260.11	0.00	25235.21
5	921	Spruce	Number	5592	11209	12173	5239	3467	4457	2255	430	1316	0	46138
			Volume in m3	335.49	1569.27	10347.29	8907.41	10782.18	21875.56	15962.39	3651.70	12294.71	0.00	85725.99
6	1162	Taxus	Number	0	1290	4301	0	0	0	0	0	0	0	5592
			Volume in m3	0.00	301.94	2008.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2310.59
7	965	Bird cherry	Number	860	0	430	0	430	0	0	0	0	0	1720
			Volume in m3	67.96	0.00	301.08	0.00	946.26	0.00	0.00	0.00	0.00	0.00	1315.30
8	19	Maple	Number	0	0	860	0	0	0	0	0	0	0	860
			Volume in m3	0.00	0.00	602.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	602.16
9	651	Walnut	Number	0	0	0	0	0	0	0	0	0	0	0

			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	38	Aescules	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	1010	Ban oak	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	1017	Kharshu Oak	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	1006	Mohru Oak	Number	430	1290	1290	1290	0	860	430	430	0	0	6022
			Volume in m3	57.64	387.11	1290.35	2322.64	0.00	3957.08	2709.74	3440.94	0.00	0.00	14165.49
14	1038	Rhododendron	Number	0	860	1290	0	0	0	0	0	0	0	2151
			Volume in m3	0.00	252.91	913.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1166.48
15	2000	Other B/L	Number	0	0	430	0	0	0	0	0	0	0	430
			Volume in m3	0	0	305	0	0	0	0	0	0	0	305
		G.Total	Number	49709	70733	98506	72373	54374	38916	11469	4431	8328	860	409701
			Volume in m3	3007.51	10362.86	48414.56	95232.34	133680.05	147019.82	63118.66	28839.57	62969.53	6090.47	598735.37

Table- 2.4

General Abstract

Growing Stock in all PBs

Sr. No	Species Code	Species		10-20 V	20-30 IV	30-40 III	40-50 IIA	50-60 IIB	60-70 IA	70-80 IB	80-90 IC	90-100 ID	100 over IE	Total
1	241	Deodar	Number	80529	78008	122040	104993	78586	40674	14569	6803	5917	860	532980
			Volume in m3	4808.50	10921.15	51256.96	133341.09	189392.46	140743.74	73087.57	41431.97	41893.74	6090.47	692967.65
2	926	Kail	Number	26702	16382	9721	9502	10998	8197	3397	1677	1720	0	88296
			Volume in m3	1602.11	2293.42	4082.79	12067.13	26505.25	29018.28	16341.77	10212.85	12180.93	0.00	114304.55
3	929	Chil	Number	361	3011	6743	3302	430	430	0	0	0	0	14277
			Volume in m3	21.64	421.52	2832.03	4193.52	1036.58	1522.62	0.00	0.00	0.00	0.00	10027.90
4	2	Fir	Number	361	3230	721	1247	430	3935	0	0	456	416	10796
			Volume in m3	21.64	452.21	613.08	2119.68	1337.67	20067.64	0.00	0.00	4260.11	3884.51	32756.53
5	921	Spruce	Number	11804	15397	15530	6321	4965	5900	4584	430	1316	832	67079
			Volume in m3	708.23	2155.60	13200.11	11255.17	16158.05	29946.64	32964.56	3651.70	12294.71	7769.01	130103.77
6	1162	Taxus	Number	832	1290	5133	0	0	832	416	0	0	0	8503
			Volume in m3	86.51	301.94	2397.10	0.00	0.00	1617.85	1137.07	0.00	0.00	0.00	5540.47
7	965	Bird cherry	Number	860	0	2094	0	430	0	0	0	0	0	3384
			Volume in m3	67.96	0.00	1465.60	0.00	946.26	0.00	0.00	0.00	0.00	0.00	2479.82
8	19	Maple	Number	0	0	860	0	0	0	0	0	0	0	860
			Volume in m3	0.00	0.00	602.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	602.16
9	651	Walnut	Number	0	0	0	0	416	416	832	416	0	416	2495

			Volume in m3	0.00	0.00	0.00	0.00	1039.75	1580.42	4242.18	2994.48	0.00	4699.67	14556.50
10	38	Aescules	Number	0	0	0	415.9	0	0	0	0	0	0	415.9
			Volume in m3	0.00	0.00	0.00	555.64	0.00	0.00	0.00	0.00	0.00	0.00	555.64
11	1010	Ban oak	Number	1803	0	721	0	0	0	0	0	0	0	2524
			Volume in m3	241.63	0.00	473.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	715.51
12	1017	Kharshu Oak	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	1006	Mohru Oak	Number	430	1290	1290	1290	0	860	430	430	0	0	6022
			Volume in m3	57.64	387.11	1290.35	2322.64	0.00	3957.08	2709.74	3440.94	0.00	0.00	14165.49
14	1038	Rhododendron	Number	1443	1276	1290	0	0	0	0	0	0	0	4009
			Volume in m3	135.60	375.18	913.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1424.35
15	2000	Other B/L	Number	0	416	430	0	0	0	0	0	0	0	846
			Volume in m3	0.00	122.27	304.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	426.80
		G.Total	Number	125124	120301	166574	127071	96255	61244	24228	9756	9410	2524	742487
			Volume in m3	7751.44	17430.40	79432.16	165854.86	236416.03	228454.27	130482.89	61731.95	70629.48	22443.65	1020627.15

Table- 2.5**No of samples taken**

Name of range	PB I	PB II	PB III	PBIV	Total
Arsu	1	3	4	3	11
Chowai	10	12	4	4	30
Nither	6	6	1	0	13
Total	17	21	9	7	54

2.8 Comparative Statement:

As discussed in the Para No. 2.7 above, sampled enumeration has been carried out on the grid system basis in the sample ID's (Plots) of the size 0.1 hac. each. The whole area of the Anni Forest Division was divided into grids and total 274 No's of sample were taken. Out of these 54 No's of sample plots pertaining to this working Circle were enumerated down to 10 cm dbh and analyzed. Thereafter, the growing stocks have been assessed/extrapolated as given in the table no. 2.2, 2.3 & 2.4 respectively.

The abstract showing the growing stock of PB-I, PB-II, PB-III , PB-IV & Total for this working circle in Negi's working plan and in the plan under revision is given and tabulated in table No. 2.6, 2.7, 2.8, 2.9 & 2.10 respectively.

Table No. 2.6

PB -I (Area 616.27 hac.)

Species wise No. & volume in cum. (Estimated/extrapolated growing stock) for Deodar Kail working
Circle

Working Plan		No., Vol. in cum.	10-20'	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100 & above	Total No.& Vol.
Negi's Plan	Species		V	IV	III	IIA	IIB	IA	IB	IC	ID & above	
	Deodar	No.	22392	13293	8398	5752	4072	2791	2191	887	597	60373
		Vol.	3985.776	6460.4	8691.9	10492	11626	11515.67	12358	6554.9	5602.25	77286.892
	Kail	No.	15483	6880	4175	2548	2157	1897	1266	551	313	35270
		Vol.	2353.416	2910.2	4024.7	4522.7	6158.2	7976.885	7385	4249.9	3089.94	42670.941
	Chil	No.	1127	851	572	309	137	92	52	25	6	3171
		Vol.	100.303	279.13	443.3	456.7	338.39	348.588	284.2	188.28	64.878	2503.769
	Fir/Spruce	No.	13969	6061	3180	2384	1978	1693	1216	902	1070	32453
		Vol.	1899.784	2600.2	3307.2	4694.1	6363.2	8099.312	8110	8002.5	12191.6	55267.896
	Total No. Trees		52971	27085	16325	10993	8344	6473	4725	2365	1986	131267
	Total Vol.		8339.28	12249.9	16467.1	20165.5	24485.8	27940.5	28137.2	18995.6	20948.7	177729.498

PB -I (Area 731.20 hac.)

Species wise No. & volume in cum. (Estimated / extrapolated growing stock) for Deodar Kail working
Circle

Working Plan	Species	No., Vol. in	10-20'	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100 & above	Total No. & Vol.

Current Plan		cum .	V	IV	III	IIA	IIB	IA	IB	IC	ID	IE & above	
	Deodar	No.	19355	36130	49464	35700	26667	9893	3011	430	3011	860	184520
		Vol.	1138.09	5058.18	20774.68	45338.70	64268.18	35007.28	14482.06	2619.42	21316.63	6090.47	216094
	Kail	No.	11613	5592	1720	3871	5161	5161	2581	860	1720	0	38280
		Vol.	696.79	782.81	722.60	4916.24	12439.00	18271.40	12413.20	5238.83	12180.93	0.00	67662
	Chil	No.	0	3011	6022	2581	430	430	0	0	0	0	12473
		Vol.	0	421.52	2529.09	3277.50	1036.58	1522.62	0.00	0.00	0.00	0.00	8787
	Fir	No.	0	860	0	430	430	2151	0	0	0	0	3871
		Vol.	0	120.43	0.00	731.20	1337.67	10968.00	0.00	0.00	0.00	0.00	13157
	Spruce	No.	5592	10753	9893	3871	3011	1720	430	430	860	0	36560
		Vol.	335.49	1505.41	8408.80	6581.23	9363.66	7918.47	3045.23	3651.70	8034.60	0.00	48845
	Total No. Trees	No.	36560	56345	67098	46453	35700	19355	6022	1720	5592	860	275705
	Total Vol.	Vol.	2170.37	7888.36	32435.17	60844.87	88445.09	73687.76	29940.49	11509.95	41532.16	6090.47	354545

Table No. 2.7

PB -II (Area 831.62 hac.)

Species wise No. & volume in cum. (Estimated / extrapolated growing stock) for Deodar Kail working Circle

Working Plan	Species	No., Vol. in cum.	10-20'	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100 & above	Total No.
			V	IV	III	IIA	IIB	IA	IB	IC	ID & above	
gi's Plan	Deodar	No.	3439	2519	3206	3866	2845	1954	1105	457	387	19778
		Vol.	611.252	1224.2	3318.2	7051.6	8122.5	8062.204	6231	3377.2	3723.2	41721.4
	Kail	No.	508	707	1068	817	343	190	115	38	6	3792
		Vol.	77.216	299.06	1029.6	1450.2	979.27	798.95	669.8	293.09	59.232	5656.42
	Chil	No.	206	218	296	308	344	216	70	7	14	1679
		Vol.	18.334	71.504	229.4	547.52	849.68	818.424	382.6	52.717	151.382	3121.56

	Fir/Spruce	No.	628	258	66	49	11	20	10	1	0	1043
		Vol.	85.408	110.68	68.64	96.481	35.387	95.68	66.69	8.872	0	567.838
	Total No. Trees		4781	3702	4636	5040	3543	2380	1300	503	407	26292
	Total No. Vol.		792.21	1705.44	4645.84	9145.8	9986.84	9775.26	7350.09	3731.88	3933.81	51067.2

PB -II (Area 757.34 hac.)

Species wise No. & volume in cum. (Estimated/extrapolated growing stock) for Deodar Kail working Circle

Workin g Plan			10-20'	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100 & above	Total No. & Vol.
Current Plan	Species	No., Vol. in cum.	V	IV	III	IIA	IIB	IA	IB	IC	ID	IE & above	
	Deodar	No.	31015	25605	40031	33179	21278	10819	7573	2885	1082	0	173467
		Vol.	1860.89	3584.74	16812.95	42136.96	51279.13	38299.77	37246.70	17570.29	7659.95	0.00	216451
	Kail	No.	10098	8295	5049	3967	2885	2164	361	361	0	0	33179
		Vol.	605.87	1161.25	2120.55	5038.11	6953.10	7659.95	1734.67	2196.29	0.00	0.00	27470
	Chil	No.	361	0	721	721	0	0	0	0	0	0	1803
		Vol.	21.64	0.00	302.94	916.02	0.00	0.00	0.00	0.00	0.00	0.00	1241
	Fir	No.	361	1082	721	361	0	0	0	0	0	0	2524
		Vol.	22	151	613	613	0	0	0	0	0	0	1399
	Spruce	No.	2885	2524	2524	1082	1082	1443	1082	0	0	0	12622
		Vol.	173.11	353.43	2145.80	2347.75	4082.42	8071.08	8168.45	0.00	0.00	0.00	25342
	Total No. Trees	No.	44719	37506	49047	39310	25245	14426	9016	3246	1082	0	223596

Total Vol.	Vol.	2683.15	5250.8 9	21995.3 2	51051.93	62314.6 6	54030.8 0	47149.8 2	19766.5 7	7659.9 5	0.00	271903

Table No. 2.8

PB -III (Area 359.74 hac.)

Species wise No. & volume in cum. (Estimated/extrapolated growing stock) for Deodar Kail working Circle

Working Plan		No., Vol. in cum.	10-20'	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100 & above	Total No.
	Species		V	IV	III	IIA	IIB	IA	IB	IC	ID & above	
Negi's Plan	Deodar	No.	5756	5861	8469	4594	1618	721	361	186	158	27724
		Vol.	1024.568	2848.4	8765.4	8379.5	4619.4	2774.846	2036	1374.5	1482.67	33305.28
	Kail	No.	550	454	355	178	51	23	10	0	0	1621
		Vol.	83.6	192.04	342.22	315.95	145.61	96.715	58.24	0	0	1234.375
	Chil	No.	0	0	0	0	0	0	0	0	0	0
		Vol.	0	0	0	0	0	0	0	0	0	0
	Rai/Spruce	No.	3190	1398	530	175	69	44	25	8	12	5451
		Vol.	433.84	599.74	551.2	344.58	221.97	210.496	166.7	70.976	136.728	2736.23
	Total No. Trees		9496	7713	9354	4947	1738	788	396	194	170	34796
	Total Vol.		1542.01	3640.18	9658.82	9040.03	4986.98	3082.06	2260.94	1445.48	1619.4	37275.9

PB -III (Area 374.31hac.)

Species wise No. & volume in cum. (Estimated/extrapolated growing stock) for Deodar Kail working Circle

Working Plan		No., Vol. in cum.	10-20'	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100 & above	Total No. & Vol.
	Species		V	IV	III	IIA	IIB	IA	IB	IC	ID	IE & above	
Current Plan	Deodar	No.	18300	6239	12477	13309	13309	5823	1248	1664	0	0	72367
		Vol.	1097.98	873.39	5240.34	16902.18	32074.21	20612.00	6001.44	10131.32	0.00	0.00	92933
	Kail	No.	4991	2495	2495	1664	2495	416	0	0	0	0	14557
		Vol.	299.45	349.36	1048.07	2112.77	6013.91	1472.29	0.00	0.00	0.00	0.00	11296
	Chil	No.	0	0	0	0	0	0	0	0	0	0	0
		Vol.	0	0	0	0	0	0	0	0	0	0	0
	Fir	No.	0	832	0	0	0	416	0	0	0	416	1664
		Vol.	0.00	116.45	0.00	0.00	0.00	2121.09	0.00	0.00	0.00	3884.51	6122
	Spruce	No.	3327	1664	832	0	416	0	1248	0	0	832	8318
		Vol.	199.63	232.90	707.03	0.00	1293.45	0.00	8833.72	0.00	0.00	7769.01	19036
	Total No. Trees	No.	26617.60	11229.30	15804.20	14972.40	16220.10	6654.40	2495.40	1663.60	0.00	1247.70	96905
	Total Vol.	Vol.	1597.06	1572.10	6995.44	19014.95	39381.57	24205.38	14835.15	10131.32	0.00	11653.52	129386

Table No. 2.9

PB -IV (Area 374.32 hac.)

Species wise No. & volume in cum. (Estimated/extrapolated growing stock) for Deodar Kail working Circle

Working Plan			10-20'	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100 & above	Total No.
	Species	No., Vol. in cum.	V	IV	III	IIA	IIB	IA	IB	IC	ID & above	
Negi's Plan	Deodar	No.	39814	14094	9685	6189	3787	2566	2291	1243	1308	80977
		Vol.	7086.9	6849.7	10024	11289	10811.885	10587	12917	9185.77	12274	91025.3
	Kail	No.	4369	2199	1082	794	536	376	233	190	150	9929
		Vol.	664.01	930.18	1043	1405.8	1530.28	1581	1357	1465.47	1480.8	11457.5
	Chil	No.	6	5	10	25	24	25	6	9	0	110
		Vol.	0.534	1.64	7.75	36.95	59.28	94.73	32.796	67.779		301.459
	Fir/Spruce	No.	17734	4973	2519	1559	1180	887	551	339	597	30339
		Vol.	2411.8	2133.4	2619.8	3069.7	3796.06	4243	3674.6	3007.61	3802.2	28758.2
	Total No. Trees		61923	21271	13296	8567	5527	3854	3081	1781	2055	121355
	Total Vol.		10163.24	9914.92	13694.55	15801.45	16197.51	16505.73	17981.4	13726.63	17557	131542

PB -IV (Area 319.28hac.)

Species wise No. & volume in cum. (Estimated/extrapolated growing stock) for Deodar Kail working Circle

Working Plan			10-20'	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100 & above	Total No. & Vol.
	Species	No., Vol. in cum.	V	IV	III	IIA	IIB	IA	IB	IC	ID	IE & above	
Current Plan	Deodar	No.	11859	10035	20069	22806	17332	14140	2737	1824	1824	0	102626
		Vol.	711.54	1404.83	8428.99	28963.26	41770.95	46824.69	15357.37	11110.94	12917.16	0.00	167490
	Kail	No.	0	0	456	0	456	456	456	456	0	0	2281
		Vol.	0.00	0.00	191.57	0.00	1099.24	1614.64	2193.91	2777.74	0.00	0.00	7877
	Chil	No.	0	0	0	0	0	0	0	0	0	0	0
		Vol.	0	0	0	0	0	0	0	0	0	0	0

	Fir	No.	0	456.1	0.0	456.1	0.0	1368.3	0.0	0.0	456.1	0.0	2737
		Vol.	0	63.86	0.00	775.39	0.00	6978.55	0.00	0.00	4260.11	0.00	12078
	Spruce	No.	0	456	2281	1368	456	2737	1824	0	456	0	9578
		Vol.	0	63.86	1938.49	2326.18	1418.52	13957.10	12917.16	0.00	4260.11	0.00	36881
	Total No. Trees	No.	11858.97	10946.74	22805.71	24630.17	18244.57	18700.69	5017.26	2280.57	2736.69	0.00	117221
	Total Vol.	Vol.	711.54	1532.54	10559.05	32064.83	44288.70	69374.98	30468.43	13888.68	21437.37	0.00	224326

Table No. 2.10

All PB's (Area: 2181.95 Hac)

Species wise No. & volume in cum. (Estimated/extrapolated growing stock) for Deo/Kail working Circle

Working Plan		No., Vol. in cum.	10-20'	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100 & above	Total No. & Vol.
Negi's Plan	Species		V	IV	III	IIA	IIB	IA	IB	IC	ID & above	
	Deodar	No.	71401	35767	29758	20401	12322	8032	5948	2773	2450	188852
		Vol.	12708.496	17382.7	30799.5	37212.1	35179.785	32939.716	33542	20492.37	23082.12	243339
	Kail	No.	20910	10240	6680	4337	3087	2486	1624	779	469	50612
		Vol.	3178.242	4331.48	6439.52	7694.65	8813.36	10453.55	9470.04	6008.46	4629.972	61019.3
	Chil Spruce	No.	1339	1074	878	642	505	333	128	41	20	4960
		Vol.	119.171	352.274	680.45	1041.17	1247.35	1261.742	699.596	308.776	216.26	5926.79
		No.	35521	12690	6295	4167	3238	2644	1802	1250	1679	69286
		Vol.	4830.832	5444.02	6546.84	8204.861	10416.617	12648.488	12017.99	11089.958	16130.53	87330.1
	Total No. Trees		129171	59771	43611	29547	19152	13495	9502	4843	4618	313710

	Total Vol.		20836.74	27510.47	44466.31	54152.78	55657.11	57303.5	55729.63	37899.56	44058.9	397615

All PB (Area hac. 2182.13 hac.)

Species wise No. & volume in cum. (Estimated/extrapolated growing stock) for Deodar Kail working Circle

Working Plan		No., Vol. in cum.	10-20'	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100 & above	Total No. & Vol.
Current Plan	Species		V	IV	III	IIA	IIB	IA	IB	IC	ID	IE & above	
	Deodar	No.	80529	78008	122040	104993	78586	40674	14569	6803	5917	860	532980
		Vol.	4808	10921	51257	133341	189392	140744	73088	41432	41894	6090	692968
	Kail	No.	26702	16382	9721	9502	10998	8197	3397	1677	1720	0	88296
		Vol.	1602	2293	4083	12067	26505	29018	16342	10213	12181	0	114305
	Chil	No.	361	3011	6743	3302	430	430	0	0	0	0	14277
		Vol.	22	422	2832	4194	1037	1523	0	0	0	0	10028
	Fir	No.	361	3230	721	1247	430	3935	0	0	456	416	10796
		Vol.	22	452	613	2120	1338	20068	0	0	4260	3885	32757
	Spruce	No.	11804	15397	15530	6321	4965	5900	4584	430	1316	832	67079
		Vol.	708	2156	13200	11255	16158	29947	32965	3652	12295	7769	130104
	Total No. Trees	No.	119755.70	116027.82	154755.05	125364.83	95409.10	59135.90	22550.26	8910.38	9410.13	2107.94	713427
	Total Vol.	Vol.	7162.12	16243.89	71984.97	162976.58	234430.02	221298.92	122393.90	55296.53	70629.48	17743.98	980160

2.9 Silvicultural System:

The forests allotted to this Working Circle shall be managed under the Punjab Shelter Wood System. This system permits retention of compact group of well grown poles over certain minimum area and also permits selection management over on steep slopes thus bringing in an element of irregularity in the final crop. Therefore, this system is also called as Irregular Shelter wood System. This system allows fellings according to the nature of ground and permits of a certain degree of irregularity by avoiding sacrifice of immature pole crops which is retained as advance growth. On broken and steep terrain liable to erosion, marking conform to selection principles. Removal of over wood in secondary and final felling will be done only after keeping in view the progress of regeneration and establishment thereof. Natural regeneration will be supplemented by artificial regeneration.

2.10 Choice of Species:

The coniferous species most suited to the locality will be favoured. In depressions which is generally unsuitable for conifers, suitable broad leaved species will be planted. The species perfectly suited to the locality will be preferred and shall get preference over all other species. Economically both Deodar and Kail are important species but Kail is more susceptible to fire damage and is often damaged by fire. It is also lopped heavily and is more prone to fungus attack which renders the timber of Kail trees unsuitable for use. Therefore, all reasonable attempts must be made to increase the proportion of Deodar. This can also be done at the time of cleaning, thinning and improvement fellings. However, the Deodar should never be tried on hot southern aspects and exposed ridges in its zone which is best suited for Kail. Similarly, on moist locations and along nalas or in the area occupied by Spruce and Fir, Deodar should never be tried for introduction. The detailed suitability and treatment map of the area should be prepared before taking up sowing and planting.

2.11 Regeneration Period:

The results of past management shows that the period of 30 years or more is enough to regenerate any PB-I areas. Therefore, regeneration period of 30 years has been adopted for this Working Circle. Besides restocking P.B.I areas, during the Working Plan period, all the un-regenerated and blank areas included in the P.B.IV shall also be regenerated artificially depending upon availability of funds. Efforts will be made to regenerate the area naturally, supplemented with artificial planting.

2.12 Rotation Period:

The rotation period is fixed at 120 years because it is economical both for Deodar and Kail. For production of structural timber in demand, the exploitable diameter of 60 cms dbh is best suitable size and therefore, the exploitable diameter to 60 cms dbh has been fixed.

2.13 Exploitable Diameter:

Exploitable diameter fixed is 60 cm dbh being the most suited to yield better out turn in the form of sleeper size which fetches better price in the market.

2.14 Felling Cycle:

The felling cycle of 30 years corresponding to the regeneration period of the plan will be adopted, keeping in view the silviculture requirements.

2.15 Division into Periodic Blocks:

With the rotation of 120 years and regeneration period of 30 years, the area of the whole Working Circle has been divided into four periodic Blocks as P.B.I, P.B.II, P.B.III and PB-IV. Definite areas have been allotted to each periodic block. The forests included in this Working Circle are in conversion stage and the crop is irregular/uneven aged with preponderance of lower classes, so PBs cannot be divided on text book pattern. Yet every attempt is made to allot areas as to fit in PBs depending on dia classes available. The allotment is discussed as under:-

2.15.1 PB-I (731.20 Hac.): It consists of those areas which has not been felled during the previous plan for regeneration and consists of the areas which are mature and ready for harvesting. It also consists of those areas that remained under stock during the previous plan and where regeneration is either still progressing or has not come at all. The forests with generally blanks & having majority of mature trees are allotted to this PB. No fellings were generally done in the plan under revision in PB-I due to complete moratorium on green fellings. However, only salvage markings and green felling under FCA cases were carried out during the period of Working Plan under revision. No change is made in PB-I area under revision. The distribution of number of trees and volume per hac. is tabulated in table No.2.11.

Table- 2.11

Species wise distribution of number of trees and volume per hac.

Spp. Code	Species		10-20 V	20-30 IV	30-40 III	40-50 IIA	50-60 IIB	60-70 IA	70-80 IB	80-90 IC	90-100 ID	100 over IE	Total
241	Deodar	Number	45	84	115	83	62	23	7	1	7	2	429
		Volume in m3	2.65	11.76	48.30	105.41	149.42	81.39	33.67	6.09	49.56	14.16	502.41
926	Kail	Number	27	13	4	9	12	12	6	2	4	0	89
		Volume in m3	1.62	1.82	1.68	11.43	28.92	42.48	28.86	12.18	28.32	0.00	157.31
929	Chil	Number	0	7	14	6	1	1	0	0	0	0	29
		Volume in m3	0.00	0.98	5.88	7.62	2.41	3.54	0.00	0.00	0.00	0.00	20.43
2	Fir	Number	0	2	0	1	1	5	0	0	0	0	9
		Volume in m3	0.00	0.28	0.00	1.70	3.11	25.50	0.00	0.00	0.00	0.00	30.59
921	Spruce	Number	13	25	23	9	7	4	1	1	2	0	85
		Volume in m3	0.78	3.50	19.55	15.30	21.77	18.41	7.08	8.49	18.68	0.00	113.56
1162	Taxus	Number	0	3	10	0	0	0	0	0	0	0	13
		Volume in m3	0.00	0.70	4.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.37
965	Bird cherry	Number	2	0	1	0	1	0	0	0	0	0	4
		Volume in m3	0.16	0.00	0.70	0.00	2.20	0.00	0.00	0.00	0.00	0.00	3.06
19	Maple	Number	0	0	2	0	0	0	0	0	0	0	2
		Volume in m3	0.00	0.00	1.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.40
38	Aescules	Number	0	0	0	0	0	0	0	0	0	0	0
		Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1006	Mohru Oak	Number	1	3	3	3	0	2	1	1	0	0	14
		Volume in m3	0.13	0.90	3.00	5.40	0.00	9.20	6.30	8.00	0.00	0.00	32.93
1038	Rhododendron	Number	0	2	3	0	0	0	0	0	0	0	5
		Volume in m3	0.00	0.59	2.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.71
2000	Other B/L	Number	0	0	1	0	0	0	0	0	0	0	1
		Volume in m3	0.00	0.00	0.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.71
	G Total	Number	88	139	176	111	84	47	15	5	13	2	680

		Volume in m3	5.34	20.53	88.01	146.86	207.83	180.52	75.91	34.76	96.56	14.16	870.48

2.15.2 PB-II (757.34 Hac.): Forests, having preponderance of age classes, approaching maturity, have been allotted to this periodic block. No change is made in PB-II areas of the plan under revision. The distribution of number of trees and volume per hac. is tabulated in table No. 2.12.

Table- 2.12
Species wise distribution of number of trees and volume per hac.
Circle

Spp. Code	Species		10-20 V	20-30 IV	30-40 III	40-50 IIA	50-60 IIB	60-70 IA	70-80 IB	80-90 IC	90-100 ID	100 over IE	Total
241	Deodar	Number	86	71	111	92	59	30	21	8	3	0	481
		Volume in m3	5.16	9.94	46.62	116.84	142.19	106.2	103.28	48.72	21.24	0	600.19
926	Kail	Number	28	23	14	11	8	6	1	1	0	0	92
		Volume in m3	1.68	3.22	5.88	13.97	19.28	21.24	4.81	6.09	0	0	76.17
929	Chil	Number	1	0	2	2	0	0	0	0	0	0	5
		Volume in m3	0.06	0	0.84	2.54	0	0	0	0	0	0	3.44
2	Fir	Number	1	3	2	1	0	0	0	0	0	0	7
		Volume in m3	0.06	0.42	1.7	1.7	0	0	0	0	0	0	3.88
921	Spruce	Number	8	7	7	3	3	4	3	0	0	0	35
		Volume in m3	0.48	0.98	5.95	6.51	11.32	22.38	22.65	0	0	0	70.27
1162	Taxus	Number	0	0	0	0	0	0	0	0	0	0	0
		Volume in m3	0	0	0	0	0	0	0	0	0	0	0
965	Bird cherry	Number	0	0	0	0	0	0	0	0	0	0	0
		Volume in m3	0	0	0	0	0	0	0	0	0	0	0
19	Maple	Number	0	0	0	0	0	0	0	0	0	0	0
		Volume in m3	0	0	0	0	0	0	0	0	0	0	0
38	Aescules	Number	0	0	0	0	0	0	0	0	0	0	0
		Volume in m3	0	0	0	0	0	0	0	0	0	0	0
1010	Ban oak	Number	5	0	2	0	0	0	0	0	0	0	7
		Volume in m3	0.67	0	1.314	0	0	0	0	0	0	0	1.984
1017	Kharshu Oak	Number	0	0	0	0	0	0	0	0	0	0	0
		Volume in m3	0	0	0	0	0	0	0	0	0	0	0
1006	Mohru Oak	Number	0	0	0	0	0	0	0	0	0	0	0
		Volume in m3	0	0	0	0	0	0	0	0	0	0	0
1038	Rhododendron	Number	4	0	0	0	0	0	0	0	0	0	4
		Volume in m3	0.376	0	0	0	0	0	0	0	0	0	0.376
2000	Other B/L	Number	0	0	0	0	0	0	0	0	0	0	0
		Volume in m3	0	0	0	0	0	0	0	0	0	0	0
	G.Total	Number	133	104	138	109	70	40	25	9	3	0	631
		Volume in m4	8.486	14.56	62.304	141.56	172.79	149.82	130.74	54.81	21.24	0	756.31

2.15.3 PB-III (374.31Hac.): The forests having preponderance of middle aged crops with few scattered matured and maturing trees have been allotted to this PB. No change has been made in the plan under revision. The distribution of number of trees and volume per hac. are tabulated in table No. 2.13.

Table No.- 2.13

Species Code	Species		10-20 V	20-30 IV	30-40 III	40-50 IIA	50-60 IIB	60-70 IA	70-80 IB	80-90 IC	90-100 ID	100 over IE	Total
241	Deodar	Number	44	15	30	32	32	14	3	4	0	0	174
		Volume in m3	2.64	2.1	12.6	40.64	77.12	49.56	14.43	24.36	0	0	223.45
926	Kail	Number	12	6	6	4	6	1	0	0	0	0	35
		Volume in m3	0.72	0.84	2.52	5.08	14.46	3.54	0	0	0	0	27.16
929	Chil	Number	0	0	0	0	0	0	0	0	0	0	0
		Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	Fir	Number	0	2	0	0	0	1	0	0	0	1	4
		Volume in m3	0	0.28	0	0	0	5.1	0	0	0	9.34	14.72
921	Spruce	Number	8	4	2	0	1	0	3	0	0	2	20
		Volume in m3	0.48	0.56	1.7	0	3.11	0	21.24	0	0	18.68	45.77
1162	Taxus	Number	2	0	2	0	0	2	1	0	0	0	7
		Volume in m3	0.208	0	0.934	0	0	3.89	2.734	0	0	0	7.766
965	Bird cherry	Number	0	0	4	0	0	0	0	0	0	0	4
		Volume in m3	0	0	2.8	0	0	0	0	0	0	0	2.8
19	Maple	Number	0	0	0	0	0	0	0	0	0	0	0
		Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
651	Walnut	Number	0	0	0	0	1	1	2	1	0	1	6
		Volume in m3	0	0	0	0	2.5	3.8	10.2	7.2	0	11.3	35
38	Aescules	Number	0	0	0	1	0	0	0	0	0	0	1
		Volume in m3	0	0	0	1.336	0	0	0	0	0	0	1.336
1010	Ban oak	Number	0	0	0	0	0	0	0	0	0	0	0
		Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1017	Kharshu Oak	Number	0	0	0	0	0	0	0	0	0	0	0
		Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1006	Mohru Oak	Number	0	0	0	0	0	0	0	0	0	0	0
		Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1038	Rhododendron	Number	0	1	0	0	0	0	0	0	0	0	1
		Volume in m3	0	0.294	0	0	0	0	0	0	0	0	0.294
2000	Other B/L	Number	0	1	0	0	0	0	0	0	0	0	1
		Volume in m3	0	0.294	0	0	0	0	0	0	0	0	0.294
	G.Total	Number	66	29	44	37	40	19	9	5	0	4	253
		Volume in m3	4.048	4.368	20.554	47.056	97.19	65.89	48.604	31.56	0	39.32	358.59

2.15.4 PB-IV (319.28Hac.): All the compartments carrying established young pole crop with scattered mother trees, un-regenerated forests and areas requiring immediate restocking have been allotted to PB-IV as in the plan under revisions no change has been made therein. The species wise distribution in different classes is tabulated in table No. 2.14.

Table No.- 2.14

Species wise distribution of number of trees and volume per hac.

Species Code	Species		10-20 V	20-30 IV	30-40 III	40-50 IIA	50-60 IIB	60-70 IA	70-80 IB	80-90 IC	90-100 ID	100 over IE	Total
241	Deodar	Number	26	22	44	50	38	31	6	4	4	0	225
		Volume in m3	1.56	3.08	18.48	63.5	91.58	102.66	33.67	24.36	28.32	0	367.21
926	Kail	Number	0	0	1	0	1	1	1	1	0	0	5
		Volume in m3	0	0	0.42	0	2.41	3.54	4.81	6.09	0	0	17.27
929	Chil	Number	0	0	0	0	0	0	0	0	0	0	0
		Volume in m3	0	0	0	0	0	0	0	0	0	0	0
2	Fir	Number	0	1	0	1	0	3	0	0	1	0	6
		Volume in m3	0	0.14	0	1.7	0	15.3	0	0	9.34	0	26.48
921	Spruce	Number	0	1	5	3	1	6	4	0	1	0	21
		Volume in m3	0	0.14	4.25	5.1	3.11	30.6	28.32	0	9.34	0	80.86
1162	Taxus	Number	0	0	0	0	0	0	0	0	0	0	0
		Volume in m3	0	0	0	0	0	0	0	0	0	0	0
965	Bird cherry	Number	0	0	0	0	0	0	0	0	0	0	0
		Volume in m3	0	0	0	0	0	0	0	0	0	0	0
19	Maple	Number	0	0	0	0	0	0	0	0	0	0	0
		Volume in m3	0	0	0	0	0	0	0	0	0	0	0
651	Walnut	Number	0	0	0	0	0	0	0	0	0	0	0
		Volume in m3	0	0	0	0	0	0	0	0	0	0	0
38	Aescules	Number	0	0	0	0	0	0	0	0	0	0	0
		Volume in m3	0	0	0	0	0	0	0	0	0	0	0
1010	Ban oak	Number	0	0	0	0	0	0	0	0	0	0	0
		Volume in m3	0	0	0	0	0	0	0	0	0	0	0
1017	Kharshu Oak	Number	0	0	0	0	0	0	0	0	0	0	0
		Volume in m3	0	0	0	0	0	0	0	0	0	0	0
1006	Mohru Oak	Number	0	0	0	0	0	0	0	0	0	0	0
		Volume in m3	0	0	0	0	0	0	0	0	0	0	0
1038	Rhododendron	Number	0	0	0	0	0	0	0	0	0	0	0
		Volume in m3	0	0	0	0	0	0	0	0	0	0	0
2000	Other B/L	Number	0	0	0	0	0	0	0	0	0	0	0
		Volume in m3	0	0	0	0	0	0	0	0	0	0	0
	G.Total	Number	26	24	50	54	40	41	11	5	6	0	257
		Volume in m3	1.56	3.36	23.15	70.3	97.1	152.1	66.8	30.45	47	0	491.82

2.15.5 General abstract of areas allotted PB wise:

The PB wise allotment of the areas to different Ranges is tabulated in table No: 2.15

Table No. – 2.15

Sr. No.	Name of Range	Forest category	Deo/Kail WC				
			PBI	PBII	PBIII	PBIV	Total
1	Arsu	RFs	0	0	0	112.09	112.09
		Ist Class DPFs	35.61	98.34	104	16.19	254.14
		IInd Class DPFs	0	0	0	0	0
		IIIrd Class Forests	0	0	0	0	0
		Total	35.61	98.34	104	128.28	366.23
2	Chowai	RFs	47.35	53.02	0	84.98	185.35
		Ist Class DPFs	335	459.3	175.62	106.02	1075.94
		IInd Class DPFs	30.35	0	0	0	30.35
		IIIrd Class Forests	0	0	0	0	0
		Total	412.7	512.32	175.62	191	1291.64
3	Nither	RFs	0	14.97	0	0	14.97
		Ist Class DPFs	282.89	131.71	94.69	0	509.29
		IInd Class DPFs	0	0	0	0	0
		IIIrd Class Forests	0	0	0	0	0
		Total	282.89	146.68	94.69	0	524.26
		G.Total	731.2	757.34	374.31	319.28	2182.13

2.16 Calculation of Yield:

Although the yield calculations are redundant considering that there is a total ban on green felling, however just for academic interest, yield calculations have been done for PBI and PBIV on the basis of extrapolated enumeration results of working circle. Increment has been ignored for the reasons of safety against fire and other natural calamities and also to serve as emergency reserve. The yield we get from PB-I and PB-IV is designated as final yield while the yield from PBIII is called intermediate yield. Removals on account of TD must feature in the yield and must be strictly controlled.

2.16.1 Yield from PB-I areas:-The enumeration of this working circle has been carried out in 17 Nos. sample plots of size 0.1 Ha, down to 10 cms dbh in 10 cms dia classes and the details are given in the **Appendix-VI**. The Per Hectare Stems and Volume was then extrapolated to PB-I area (**731.20**) to calculate the yield just for academic interest. The abstract showing the growing stock of class wise and species wise of PB-I areas is tabulated in table No. 2.16

Table No. 2.16

PB-I (Area in Ha. = 731.20)														
Species wise No. and Volume in m3. (Estimated / Extrapolated growing stock) for Deo / Kail Working Circle														
Sr. No.	Species Code	Species		10-20 V	20-30 IV	30-40 III	40-50 IIA	50-60 IIB	60-70 IA	70-80 IB	80-90 IC	90-100 ID	100 over IE	Total
1	241	Deodar	Number	19355	36130	49464	35700	26667	9893	3011	430	3011	860	184520
			Volume in m3	1138.09	5058.18	20774.68	45338.70	64268.18	35007.28	14482.06	2619.42	21316.63	6090.47	216093.69
2	926	Kail	Number	11613	5592	1720	3871	5161	5161	2581	860	1720	0	38280
			Volume in m3	696.79	782.81	722.60	4916.24	12439.00	18271.40	12413.20	5238.83	12180.93	0.00	67661.81
3	929	Chil	Number	0	3011	6022	2581	430	430	0	0	0	0	12473
			Volume in m3	0	421.52	2529.09	3277.50	1036.58	1522.62	0.00	0.00	0.00	0.00	8787.30
	2	Fir	Number	0	860	0	430	430	2151	0	0	0	0	3871
			Volume in m3	0	120.43	0.00	731.20	1337.67	10968.00	0.00	0.00	0.00	0.00	13157.30
4	921	Spruce	Number	5592	10753	9893	3871	3011	1720	430	430	860	0	36560
			Volume in m3	335.49	1505.41	8408.80	6581.23	9363.66	7918.47	3045.23	3651.70	8034.60	0.00	48844.59
5	1162	Taxus	Number	0	1290	4301	0	0	0	0	0	0	0	5592
			Volume in m3	0.00	301.94	2008.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2310.59
6	965	Bird cherry	Number	860	0	430	0	430	0	0	0	0	0	1720
			Volume in m3	67.96	0.00	301.08	0.00	946.26	0.00	0.00	0.00	0.00	0.00	1315.30
7	19	Maple	Number	0	0	860	0	0	0	0	0	0	0	860
			Volume in m3	0.00	0.00	602.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	602.16
8	38	Aescules	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
9	1006	Mohru Oak	Number	430	1290	1290	1290	0	860	430	430	0	0	6022
			Volume in m3	57.64	387.11	1290.35	2322.64	0.00	3957.08	2709.74	3440.94	0.00	0.00	14165.49
10	1038	Rhododendron	Number	0	860	1290	0	0	0	0	0	0	0	2151
			Volume in m3	0	252.91	913.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1166.48
	2000	Other B/L	Number	0	0	430	0	0	0	0	0	0	0	430
			Volume in m3	0	0.00	304.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	304.52
		G Total	Number	37850	59786	75701	47743	36130	20216	6452	2151	5592	860	292480
			Volume in m3	2295.97	8830.32	37855.51	63167.51	89391.35	77644.84	32650.23	14950.89	41532.16	6090.47	374409.24

Calculation of the yield has been based on the volume of the trees of 40 cms dbh and over. Increment has been ignored. From the management point of view and theoretically the entire growing stock except the mother trees above 40 cms diameter should be available during the plan period. Since a compact group of poles shall be retained as advance growth and some trees will be left on broken and steep grounds, only a part of II and III/IV class trees will be available. Similarly, the yield from I and II class trees will be further restricted as some trees have to be retained as emergency reserve and fire insurance trees. The trees standing on blanks or over patches where regeneration has not established shall also be not available. Therefore, the yield on the basis of silvicultural availability is calculated as under:-

$$Y = \frac{C1V1 + C2V2 + C3V3}{P}$$

Where V1, V2 and V3 are the volumes of I class, II class trees and III and IV class trees respectively. P= Plan period i.e. 10 years.

C1, C2, C3 are the constants representing percentage of I class, II class and III class and IV class trees respectively estimated to be available for felling during the regeneration period. The values of constants of C1, C2, C3 have been fixed as under after detailed examination of forests during field inspections. These figures are arrived at after analysis number of stems per hac and emerged after considering field conditions is tabulated in table No. 2.17

Table No. – 2.17

Species	C1	C2	C3	
Deodar	0.3	0.2	0.2	% is lower for Deodar as these are to be retained as seed bearers as far as possible in preference to Kail
Kail	0.4	0.4	0.4	
Fir	0.6	0.6	0.6	
Spruce	0.6	0.6	0.6	
Chil	0.2	0.1	0.2	

The above proportion is based on purely theoretical consideration. Field inspections indicate that 60% of V, IV and III classes' trees will also be available for felling.

The yield is now calculated by Hufnagels formula as under:-

$$Y = \frac{C1V1+C2V2+C3V3}{P}$$

(Deodar) C1= Constant representing the fraction of volume of I class trees available for felling during the regeneration period. C1 has been taken as 0.3.

C2= Constant representing the fraction of volume of II class trees available for felling during period. C2 has been taken as 0.2.

C3= Constant representing the fraction of volume of IV and III class trees available for felling during period. C2 has been taken as 0.2.

(Deodar) V1= Volume of trees of I class trees of conifers = 79515.85 M³

V2= Volume of trees of II class trees of conifers = 109606.88M³

V3= Volume of trees of IV and III class trees of conifers = 25832.87M³

P= Period of the plan is 10 year i.e. Working Plan period.

$$\text{Yield} = \frac{C1V1+C2V2+C3V3}{P} = \frac{0.3 \times 79515.85 + 0.2 \times 109606.88 + 0.2 \times 25832.87}{10} = 5094.27 \text{ or say } 5094 \text{ M}^3$$

(Kail) C1= Constant representing the fraction of volume of I class trees available for felling during the regeneration period. C1 has been taken as 0.4.

C2= Constant representing the fraction of volume of II class trees available for felling during period. C2 has been taken as 0.4.

C3= Constant representing the fraction of volume of IV and III class trees available for felling during period. C2 has been taken as 0.4.

(Kail) V1= Volume of trees of I class trees of conifers = 48104.36 M3

V2= Volume of trees of II class trees of conifers = 17355.25 M3

V3= Volume of trees of IV and III class trees of conifers = 1505.41 M3

P= Period of the plan is 10 year i.e. Working Plan period.

$$\text{Yield} = \frac{C1V1+C2V2+C3V3}{P}$$

$$Y = \frac{0.4 \times 48104.36 + 0.4 \times 17355.25 + 0.4 \times 1505.41}{10} = 2678.60 \text{ or say } 2675 \text{ M}^3$$

(Fir) C1= Constant representing the fraction of volume of I class trees available for felling during the regeneration period. C1 has been taken as 0.6.

C2= Constant representing the fraction of volume of II class trees available for felling during period. C2 has been taken as 0.6.

C3= Constant representing the fraction of volume of IV and III class trees available for felling during period. C2 has been taken as 0.6.

(Fir) V1= Volume of trees of I class trees of conifers = 10968.00 M³

V2= Volume of trees of II class trees of conifers = 2068.87 M³

V3= Volume of trees of IV and III class trees of conifers = 120.43 M³

P= Period of the plan is 10 year i.e. Working Plan period.

$$\text{Yield} = Y = \frac{C1V1 + C2V2 + C3V3}{P} = \frac{0.6 \times 10968.00 + 0.6 \times 2068.87 + 0.6 \times 120.43}{10} = 789.43 \text{ say } 790 \text{ M}^3$$

(Spruce) C1= Constant representing the fraction of volume of I class trees available for felling during the regeneration period. C1 has been taken as 0.6.

C2= Constant representing the fraction of volume of II class trees available for felling during period. C2 has been taken as 0.6.

C3= Constant representing the fraction of volume of IV and III class trees available for felling during period. C2 has been taken as 0.6.

(Spruce) V1= Volume of trees of I class trees of conifers = 22650.00 M³

V2= Volume of trees of II class trees of conifers = 15944.89 M³

V3= Volume of trees of IV and III class trees of conifers = 1840.90 M³

P= Period of the plan is 10 year i.e. Working Plan period.

$$\text{Yield} = Y = \frac{C1V1 + C2V2 + C3V3}{P} = \frac{0.6 \times 22650.00 + 0.6 \times 15944.89 + 0.6 \times 1840.90}{10} = 2426.14 \text{ or say } 2425 \text{ M}^3$$

(Chil) C1= Constant representing the fraction of volume of I class trees available for felling during the regeneration period. C1 has been taken as 0.2.

C2= Constant representing the fraction of volume of II class trees available for felling during period. C2 has been taken as 0.1.

C3= Constant representing the fraction of volume of IV and III class trees available for felling during period. C2 has been taken as 0.2.

(Chil) V1= Volume of trees of I class trees of conifers = 1522.62 M³

V2= Volume of trees of II class trees of conifers = 4314.08 M³

V3= Volume of trees of IV and III class trees of conifers = 2950.61 M³

P= Period of the plan is 10 year i.e. Working Plan period.

$$\text{Yield} = Y = \frac{C1V1 + C2V2 + C3V3}{P} = \frac{0.2 \times 1522.62 + 0.1 \times 4314.08 + 0.2 \times 2950.61}{10} = 132.60 \text{ or say } 133 \text{ M}^3$$

Therefore, the annual yield of different species is summarized as under for P.B.I:

Table No. – 2.18

Sr. No.	Species	Annual yield (in m3)
1	Deodar	5094
2	Kail	2675
3	Fir	790
4	Spruce	2425
5	Chil	133
Total		11117

2.16.2 Yield from PB-II: Strictly speaking, no felling should be carried out in this PB as the growing stock is to be enriched and it is the future PB-I. However, realistically, removals on account of salvage caused by fires, landslides/slips or wind thrown only can and do occur. These removals have to be counted for in order to safe guard the future yield, no major fellings are prescribed and therefore, no yield has been calculated for this periodic block. The enumeration samples down to 10 cms dbh in 10 cms dia classes has been carried out in 21 numbers of PB-II areas and the details are given in the **Appendix No.- X**. The abstract showing the growing stock of class wise and species wise of PB-II areas is tabulated in table No. 2.2

The detail of enumeration done in the sample areas are given in **Appendix No.-VI**.

2.16.3 Intermediate yield from P.B.III: Most of the forests of this block are generally open. These forests are open and having stock less than that should be available as per growing stock mention in the yield table. However, removals of fallen uprooted and snow damaged trees is to be carried out periodically. The over mature trees of 70 cm and over if suppressing middle age crop and deteriorating should also be removed provided that their removal does not create everlasting gap. The demand of right holders used to be invariably met from the forests of this periodic block before imposition of ban on green fellings and recently the ban on grant of TD to the right holders has been lifted and only dry and fallen trees are now being given to the right holders. With the improvement in socio economic condition of the people on account of development of horticulture and other cash crops, the demand for timber has also increased correspondingly and is likely to increase further year after year. There will be no volume control of yield from thinning since there is hardly any scope of thinning except in Deodar plantations. Hence no green fellings are prescribed. The removals will, however, count toward the yield of PB-I.

As given in the Chapter-VIII under paragraph 8.8 sampled enumeration of the samples size 0.1 ha, down to 10 cms dbh in 10 cms dia classes has been carried out in 9 numbers of PB-III areas and the details are given in the **Appendix No.-VI**.

The abstract showing the growing stock of class wise and species wise of PB-III areas is tabulated in table No. 2.2

The detail of enumeration done in the sample areas is given in **Appendix No.-VI**.

2.16.4 Yield from PB-IV Area. The enumeration of this working circle has been carried out in 7 Nos. sample plots of size 0.1 Ha, down to 10 cms dbh in 10 cms dia classes and the details are given in **Appendix No.-VI**. The Per Hectare Stems and Volume was then extrapolated to PB-IV area (**319.28**) to calculate the yield just for academic interest. The calculation of yield has based on the total volume of trees in PB-IV.

The results of enumeration samples taken Range wise is tabulated in table No. 2.13

Table No.– 2.19

Sr. No.	Name of Range	Sample Taken
1	Arsu	3
2	Chowai	4
3.	Nither	0
	Total	7

The abstract of growing stock is tabulated in the table No 2.20

Table No. – 2.20

PB-IV (Area in Ha. = 319.28)														
Species wise No. and Volume in m3. (Estimated / Extrapolated growing stock) for Deo / Kail Working Circle														
Sr. No	Species Code	Species		10-20 V	20-30 IV	30-40 III	40-50 IIA	50-60 IIB	60-70 IA	70-80 IB	80-90 IC	90-100 ID	100 over IE	Total
1	241	Deodar	Number	11859	10035	20069	22806	17332	14140	2737	1824	1824	0	102626
			Volume in m3	711.54	1404.83	8428.99	28963.26	41770.95	46824.69	15357.37	11110.94	12917.16	0.00	167489.73
2	926	Kail	Number	0	0	456	0	456	456	456	456	0	0	2281
			Volume in m3	0.00	0.00	191.57	0.00	1099.24	1614.64	2193.91	2777.74	0.00	0.00	7877.09
3	929	Chil	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
4	2	Fir	Number	0	456.1	0.0	456.1	0.0	1368.3	0.0	0.0	456.1	0.0	2736.7
			Volume in m3	0	63.86	0.00	775.39	0.00	6978.55	0.00	0.00	4260.11	0.00	12077.91
5	921	Spruce	Number	0	456	2281	1368	456	2737	1824	0	456	0	9578
			Volume in m3	0	63.86	1938.49	2326.18	1418.52	13957.10	12917.16	0.00	4260.11	0.00	36881.40
6	1162	Taxus	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
7	965	Bird cherry	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
8	19	Maple	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
9	651	Walnut	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
10	38	Aescules	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
11	1010	Ban oak	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
12	1017	Kharshu Oak	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
13	1006	Mohru Oak	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
14	1038	Rhododendron	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
15	2000	Other B/L	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
		G.Total	Number	11859	10947	22806	24630	18245	18701	5017	2281	2737	0	117221
			Volume in m3	711.54	1532.54	10559.05	32064.83	44288.70	69374.98	30468.43	13888.68	21437.37	0.00	224326.13

The calculation of yield has based on the total volume of trees in PB-IV. Increment has not been taken into account. All I and II class trees do not warrant their retention in this periodic block and as such can be removed during the plan period. Silviculturally, it is not possible to remove all such trees. Trees standing on precipitous and broken ground have to be retained. Besides this some I and II class trees will have to be kept as fire insurance and national emergency reserves. Similarly the II class trees standing amongst the patches of advance growth will not always be available for fellings. This being so, it has been estimated that only 75% of the volume of I and II class trees can be removed during the Working Plan period. In addition to this another 10% volume of trees 20 cms to 40 cms dbh will be available under thinning. The annual yield of different species is accordingly fixed as under:-

The yield is now calculated by Hufnagels formula as under:-

$$Y = \frac{C1V1+C2V2+C3V3}{P}$$

(Deodar) C1= Constant representing the fraction of volume of I class trees available for felling during the regeneration period. C1 has been taken as 0.3.

C2= Constant representing the fraction of volume of II class trees available for felling during period. C2 has been taken as 0.2.

C3= Constant representing the fraction of volume of IV and III class trees available for felling during period. C2 has been taken as 0.2.

(Deodar) V1= Volume of trees of I class trees of conifers = 86210.16M³

V2= Volume of trees of II class trees of conifers = 70734.21 M³

V3= Volume of trees of IV and III class trees of conifers = 9833.82M³

P= Period of the plan is 10 year i.e. Working Plan period.

$$\begin{aligned} \text{Yield} = Y &= \frac{C1V1+C2V2+C3V3}{P} \\ &= \frac{0.3 \times 86210.16 + 0.2 \times 70734.21 + 0.2 \times 9833.82}{10} = 4197.66 \text{ say } 4195 \text{ M}^3 \end{aligned}$$

(Kail) C1= Constant representing the fraction of volume of I class trees available for felling during the regeneration period. C1 has been taken as 0.8.

C2= Constant representing the fraction of volume of II class trees available for felling during period. C2 has been taken as 0.7.

C3= Constant representing the fraction of volume of IV and III class trees available for felling during period. C2 has been taken as 0.6.

(Kail) V1= Volume of trees of I class trees of conifers = 6586.29 M³

V2= Volume of trees of II class trees of conifers = 1099.24 M³

V3= Volume of trees of IV and III class trees of conifers = 191.57 M³

P= Period of the plan is 10 year i.e. Working Plan period.

$$\begin{aligned} \text{Yield} = Y &= \frac{C1V1+C2V2+C3V3}{P} \\ &= \frac{0.8 \times 6586.29 + 0.7 \times 1099.24 + 0.6 \times 191.57}{10} = 615.34 \text{ or say } 615 \text{ M}^3 \end{aligned}$$

(Fir) C1= Constant representing the fraction of volume of I class trees available for felling during the regeneration period. C1 has been taken as 0.6.

C2= Constant representing the fraction of volume of II class trees available for felling during period. C2 has been taken as 0.4.

C3= Constant representing the fraction of volume of IV and III class trees available for felling during period. C2 has been taken as 0.4.

(Fir) V1= Volume of trees of I class trees of conifers = 11238.66 M³

V2= Volume of trees of II class trees of conifers = 775.39 M³

V3= Volume of trees of IV and III class trees of conifers = 63.86 M³

P= Period of the plan is 10 year i.e. Working Plan period.

$$\text{Yield} = \frac{C1V1 + C2V2 + C3V3}{P}$$

$$Y = \frac{0.6 \times 11238.66 + 0.5 \times 775.39 + 0.4 \times 63.86}{10} = 715.64 \text{ or say } 715 \text{ M}^3$$

(Spruce) C1= Constant representing the fraction of volume of I class trees available for felling during the regeneration period. C1 has been taken as 0.4.

C2= Constant representing the fraction of volume of II class trees available for felling during period. C2 has been taken as 0.3.

C3= Constant representing the fraction of volume of IV and III class trees available for felling during period. C2 has been taken as 0.3.

(Spruce) V1= Volume of trees of I class trees of conifers = 31134.37 M³

V2= Volume of trees of II class trees of conifers = 3744.70 M³

V3= Volume of trees of IV and III class trees of conifers = 2002.35 M³

P= Period of the plan is 10 year i.e. Working Plan period.

$$\text{Yield} = \frac{C1V1 + C2V2 + C3V3}{P}$$

$$Y = \frac{0.4 \times 31134.37 + 0.3 \times 3744.70 + 0.3 \times 2002.35}{10} = 1417.78 \text{ or say } 1415 \text{ M}^3$$

Therefore, the annual yield of different species is summarized as under for P.B-IV: -

Table – 2.21

Sr. No.	Species	Annual yield
1	Deodar	4195
2	Kail	615
3	Fir	715
4	Spruce	1415
5	Chil	0
Total		6940

2.17 Total prescribed Annual yield: The total Annual prescribed yield from the forests of this Working Circle is tabulated in table 2.15 as under. However, the yield from PBIII as mentioned above will counted toward the yield of PB-I, since no forest will be available for commercial felling.

Table – 2.22

Species	PBI	PBIV	Total

Deodar	5094	4195	9289
Kail	2675	615	3290
Fir	790	715	1505
Spruce	2425	1415	3840
Chil	133	0	133
	11117	6940	18057

2.18 Control of yield: All the removals of whatever nature down up to V class shall count towards yield of this Working Circle. It is indeed impossible that the removal of various species in a particular year will conform to or equalize the prescribed yield for each species. In actual practice this is ruled out. It is, therefore, imperative that the marking in the forests should be carried out strictly on silvicultural principles. However, yield will be shown by species in the control forms and deviation statement. The deviation for a year, a period of five year and a plan period shall not exceed $\pm 25\%$, $\pm 10\%$ and $\pm 05\%$ respectively, of the annual prescribed yield. Felling in the PB-I areas will depend on the progress of regeneration. It is, therefore, most essential that critical regeneration survey of felled PBI areas is carried out annually so as to assess the progress of regeneration. In case, it is observed and revealed that regeneration is not keeping pace with the felling, further fellings shall be discontinued or deferred till such time by which regeneration in the felled PBI areas gain momentum. The detailed report should be sent to Pr. CCF (HoFF), HP through APCCF, (Working Plan) and CF Working Plan for information, scrutiny and orders. All the removals what so ever, down to 10 cms dbh in all the periodic blocks will count towards the prescribed yield?

2.19 Method of executing the felling:

2.19.1 In PB-I Areas: The technique of regeneration marking is given in CCFs, Technical Order No. 2 of the Punjab Forest manual Volume III and must be carefully studied by the marking of officer and complied. It must be emphasized that marking must aim at obtaining natural rather than artificial regeneration on suitable ground. The skill of the forester in manipulating the canopy lies in his getting natural regeneration. A little patience will bring in considerable quantities of natural regeneration of Deodar on suitable ground in Deodar and mixed Deodar and Kail forests and subsequent opening of canopy will bring in sufficient Kail. In upper part of the compartment at present being occupied by Spruce and Fir on well drained ground suitable for Deodar, the canopy must be opened out somewhat heavily and followed by artificial sowing and planting. Elsewhere, i.e. in diameter per parts the aim must be to get Spruce and Fir regeneration and the opening here must conform to the silvicultural requirements of these species. Spruce requires nearly the same amount of opening as Deodar. The detailed treatment map of forest indicating the type of marking carried out shall be prepared and posted in compartment history file.

The following general principles are however laid down for guidance of marking officer:

- (i) In seeding fellings, in case of pure crop of Deodar the number of seed bearers retained will be 35-50 (65 m^3) volume per hac. In case of Kail, this number will be 30 to 35 trees (56 to 65 M^3 volumes) per hac. In both the cases, these trees will invariably be of 35 to 55 cms diameter classes and uniformly spaced all over the areas. The average distance of seed bearers shall be 16 to 18 mts. in case of Deodar and 18 to 20 mts. in case of Kail. In case of mixture of Deodar and Kail 30 to 45 trees (56.5 to 84.74 M^3 volumes) per hac. of both Deodar, Kail of dia 35 to 55 cms per hac. shall be retained uniformly spaced all over the area.

- (ii) Well grown healthy, tall and clean boled trees preferably II to I A class trees should be selected as Seed bearers.
- (iii) In conformity with the distance consideration as far as possible seed bearers shall be left on Spurs and ridges and not in depressions for better seed dispersal.
- (iv) Compact group of healthy poles up to 40cms. dbh and not less than 0.1 hac. in extent will be retained as advance growth/future crop. It must be clearly understood and remembered that the diameter fixed for retention applies to the diameter at the time of first marking i.e. seedling felling. Once a group is retained it shall not be opened up for regeneration in the subsequent years. Vigour and condition of pole crop must determine its retention rather than its extent.
- (v) On the very steep and broken ground the marking should conform to the selection principle.
- (vi) In mixed crops, Deodar shall be preferred to Kail as seed bearer.
- (vii) Groups of pole crop retained as part of future crop shall be thinned.
- (viii) Valuable broad leaved trees such as Maple, Walnut, Bird cherry and Carpinus etc. will be preferred to other less valuable species. The seed bearer of these species should be spaced about 20 mts. apart.
- (ix) Before undertaking any forest for seeding felling it shall be ensured that the nursery stock is ready to replace the fellings immediately after timber have been extracted from the forest. To achieve this objective the nurseries should be raised 2 to 3 years in advance in the vicinity of the areas to be undertaken for fellings. In case neither nurseries has been raised nor is the stock available for planting. No marking/felling shall be done and the yield for that particular year should be considered as obtained.
- (x) The secondary felling will be carried out keeping in view the progress of regeneration and when the seedlings have retained height of over two meters. The Number of trees retained during the seeding fellings shall reduce to 50% during secondary fellings.
- (xi) The final fellings shall be carried out when average height of new crop exceeds three meters and 4-5 healthy clean bold and vigorously growing trees per hac. shall be retained as mother trees.

2.19.2 In PB-II Areas: This being sacred periodic block, no major felling of any kind and magnitude will be done in PB-II. However, only salvage marking of dead, uprooted trees will be done to clear these forests from fire hazards and improvement of the crop. The yield removed from these PBs shall be counted for yields towards the yield of the Working Circles.

2.19.3 PB-III Areas: To improve the condition of crop, hygienic removals should be done. The following broad guidelines are laid down for the marking officer to carry out the marking in this periodic block:

- (i) All removals shall aim to improving the composition and condition of the crop. Thinning will be made in favour of vigorously growing trees irrespective of size.
- (ii) No tree shall be marked to induce regeneration.

- (iii) Dead, dying, diseased and wind broken or fallen trees will be marked.
- (iv) Malformed, stunted and unhealthy trees may be marked under improvement felling.
- (v) If the stocking is less than what normally can be expected as per yield table figures, than no removal are to be carried out.
- (vi) Mature trees interfering with or suppressing young crop will be removed.
- (vii) Valuable species are to be preferred to inferior ones.
- (viii) Broad leaved species should not be cut unnecessarily on the pretext of improvement fellings. These may however, be lopped where suppressing of promising young conifer persist.
- (ix) All trees marked for any purpose shall be removed within a year.

2.19.4 Thinning: A thinning consists lessening the crowded condition of the crowns of the best trees in a canopy so as to favour their development. The main aim of thinning will be to assist the elite trees by providing them optimum growing space.

According to the British Commonwealth Forest Terminology Part-I (Empire Forestry Association, London, 1953) thinning means “Thinning is a felling made in an immature stand for the purpose of improving the growth and form of the trees that remain without permanently breaking the canopy.”

Thinning is done to regulate the distribution of growing space for the purpose of improving the growth and form of tree that are left. The object of thinning is to distribute growth potential of site amongst the trees retained, increase the net yield of timber and money from a stand, obtain earlier returns from capital invested in a stand, produce different smaller size of timber which can meet a different object of management, maintain hygienic conditions in the stand, obtain timber of the desired quality and mechanical strength, and to ensure decomposition of raw humus in temperate forests.

Thinning vary with the nature of the crop and the methods of thinning used in regular crops are different from that used in irregular crops. In present plan thinning will be carried out in accordance with the principles of thinning laid down in Punjab Forest Leaflet No. 1, 1A and book Principles and Practices of silviculture by L.S. Khanna. The crops to be thinned fall mainly in the categories discussed in the following paragraphs.

- i) Pure Deodar crops.
- ii) Pure Kail crops.
- iii) Mixed Deodar crops and Kail crops.
- iv) Deodar or Kail mixed with Spruce.

Thinning in pure Deodar crop:-Selective and increment thinning as discussed above will be carried out in deodar crops. In young crops, spacing equal to four times the girth will be quite suitable. In crops beyond pole stage, C/D grade thinning will be carried out.

Thinning in pure Kail crop:-Kail crop suffers severely from snow damage if not properly thinned in its early stages. The thinning should be light in the early stages, so that the boles get cleaned. Light and frequent thinning should, therefore, be the rule in early stages. After the boles have been cleaned of their side branches, the intensity of thinning should be increased and should

be heavier than in case of deodar. In young pole crops, the thumb rule will be to have the spacing in feet equal to one and a half times the average diameter in inches. Beyond pole stage, D grade thinning should be carried out.

Thinning in Mixed Crops of Kail and Deodar:- Thinning in mixed crops requires greater skill and will depend upon the type of mixture for carrying out thinning in usual types of deodar-kail mixtures met with in these forests, the following general principles are laid down:-

- i) In even-aged stands, where the mixture is by single trees of deodar and kail, the thinning will be carried out as in pure deodar crop favouring deodar over kail.
- ii) Where the mixture is by groups, each group will be thinned in the same way as pure stands of that crop. Along the periphery of these groups where kail and deodar grow mixed, thinning will be done as in deodar crop favouring deodar over kail.
- iii) Isolated kail trees, standing over compact groups of promising saplings or poles of deodar, will be removed and deodar will be encouraged to fill up the gaps created by felling of kail. But where deodar poles or saplings are already suppressed and are not likely to respond to the opening, kail trees should not be marked to free such suppressed deodar.

Thinning in Mixed Crops of Deodar or Kail with Spruce: - In deodar-spruce mixed crops, thinning will be carried out to favour deodar and to suit its silvicultural requirements. Spruce will be treated in the same way as kail in deodar-kail mixture. In mixed crop of kail and spruce, thinning will be carried out strictly in accordance with the silvicultural requirement of the crop, treating kail and spruce alike and removing inferior trees of either species for the benefit of better individuals.

Necessity

- i) Thinnings are made not only to increase increment but also as a measure of fire protection; woods which are well thinned at an early date and which are free from an excess of suppressed and inflammable material are much less subject to fire damage than unthinned crops.
- ii) In areas under concentrated regeneration (i.e. PB I and the youngest PB under the shelter wood system) early and repeated thinning are so important for the optimum development of the crop that periodical thinning must be carried out even though the disposal of the cut material involves expenditure of considerable sums of money. Thinning promotes not only diameter but height increment also.
- iii) The frequency of thinning cannot be rigidly prescribed as it depends upon the species; kail closes up in shorter time than deodar and thus requires shorter thinning interval. The aim should be to prevent crowding rather than to await it and then thin the crop.
- iv) Crown thinning can be carried out in PB II areas to ensure optimum space for the crowns of elite trees by removing their competitors and also the dominated trees which press the crowns of the elites strongly upwards and restrict their growth.

2.19.5 In PB-IV Areas: These markings require the removal of overhead shade wherever standing on established regeneration. These final fellings therefore correspond to more or less to the fellings in PB-I. Besides this, thinning in patches of advance growth is to be done. The following general principles are laid down for the guidance of marking officer:-

- (i) No attempt should be made to obtain or induce regeneration. The marking should aim at freeing the established regeneration by removing the over wood. Thus, first and second class trees standing over the established regeneration will be marked.

- (ii) The object of marking is to free established regeneration by removal of overhead shade. Thus, all class I and II should be removed except those standing on precipitous slopes
- (iii) All isolated Class II and III trees standing amidst young crop should be marked.
- (iv) Salable and unsalable thinnings must be carried out in congested groups of trees, poles or saplings. These should correspond to “C” Grade thinning.
- (v) All marked trees likely to damage young crop under neath should be lopped before felling.
- (vi) Broad leaved tree should not be marked unnecessarily on the pretext of improvement fellings. These should, however be lopped where found suppressing the young crop.

2.20 Table of felling:

The following tabular statement gives the order of fellings in PB-I and PB-IV areas:-

Table No. 2.23

PB-I

Year	Range	Name of Forest	Comptt. No.	Area in Hac.	Allotment	Nature of felling
1	2	3	4	6	7	8
2020-21	Arsu	-	-	-	-	-
	Chowai	-	-	-	-	-
	Nither	-	-	-	-	-
2021-22	Arsu	-	-	-	-	-
	Chowai	SATHABANDRI TRIJHAKAR	1/13 C-Va	17.81	PB-I	Seeding Felling
	Nither	SHILLA	1/24 C-II	12.14	PB-I	Seeding Felling
2022-23	Arsu	RAMGARH KANDI	1/3 C-IV	35.61	PB-I	Seeding Felling
	Chowai	SATHABANDRI TRIJHAKAR	1/13 C-IIb	39.66	PB-I	Seeding Felling
	Nither	MARAHKOD	1/14 C-I	40.47	PB-I	Seeding Felling
2023-24	Arsu	-	-	-	-	-
	Chowai	KUT	1/11 C-II	69.61	PB-I	Seeding Felling
	Nither	MARAHKOD	1/14 C-IVa	55.04	PB-I	Seeding Felling
2024-25	Arsu	-	-	-	-	-
	Chowai	TAKRASI	R/7 C-I	47.35	PB-I	Seeding Felling
	Nither	LOTKAYAION	1/15 C-I	21.45	PB-I	Seeding Felling

2025-26	Arsu	-	-	-	-	-
	Chowai	OLINAL	1/23 C-II	30.35	PB-I	Seeding Felling
	Nither	BHON	1/18 C-I	21.45	PB-I	Seeding Felling
2026-27	Arsu	-	-	-	-	-
	Chowai	BUNGBINDRABAN	1/27 C-IIa	11.74	PB-I	
	Nither	1/9 BIJURI	C-Ia	40.94 (Part)	PB-I	Seeding Felling
2027-28	Arsu	-	-	-	-	-
	Chowai	KOTADHAR & RIACHATHACH	1/28 C-II	23.47	PB-I	Seeding Felling
		KOTADHAR & RIACHATHACH	1/28 C-IIIb	6.8	PB-I	Seeding Felling
		DRAD REUNS	1/12 C-I	60 (Part)	PB-I	Seeding Felling
	Nither	BIJURI	1/9 C-Ia	40 (Part)	PB-I	Seeding Felling
2028-29	Arsu	-	-	-	-	-
	Chowai	BAGIGLAI PANE0	1/35 C-III	33.18	PB-I	Seeding Felling
	Chowai	BhamorJadari	2/22 C-I	30.35	PB-I	Seeding Felling
	Nither	BASHAD	1/10 C-I	30.4 (Part)	PB-I	Seeding Felling
2029-30	Arsu	-	-	-	-	-
	Chowai	KALANDI DHAR	1/32 C-IIa	13.35	PB-I	Seeding Felling
		DRAD REUNS	1/12 C-I	29.03 (Part)	PB-I	Seeding Felling
	Nither	BASHAD	1/10 C-I	21 (Part)	PB-I	Seeding Felling

PB-IV

Year	Range	Name of Forest	Comptt. No.	Area in Hac.	Allotment	Nature of felling
1	2	3	4	6	7	8
2020-21	Arsu	-	-	-	-	-
	Chowai	-	-	-	-	-
	Nither	-	-	-	-	-
2021-22	Arsu	KANDU SHILLA	1/5 C-Ia	16.19	PB-IV	Final Felling
	Chowai	JARONU	R/6	13.35	PB-IV	Final Felling

			Whole			
	Nither	-	-	-	-	-
2022-23	Arsu	JUJUTH	R/3 C-I	20.27 (Part)	PB-IV	Final Felling
	Chowai	TAKRASI	R/7 C-II	35.63 (Part)	PB-IV	Final Felling
	Nither					
2023-24	Arsu	JUJUTH	R/3 C-I	38 (Part)	PB-IV	Final Felling
	Chowai	TAKRASI	R/7 C-II	36 (Part)	PB-IV	Final Felling
	Nither	-	-	-	-	-
2024-25	Arsu	JUJUTH	R/3 C-III(a)	25.82 (Part)	PB-IV	Final Felling
	Chowai					
	Nither					
2025-26	Arsu	JUJUTH	R/3 C-III(a)	28 (Part)	PB-IV	Final Felling
	Chowai	KOTADHAR & RIACHATHA CH	1/28 C-IIIa	12.54	PB-IV	Final Felling
	Nither	-	-	-	-	-
2026-27	Arsu	-	-	-	-	-
	Chowai	CHOTAR	1/30 C-II	23.47	PB-IV	Final Felling
	Nither	-	-	-	-	-
2027-28	Arsu	-	-	-	-	-
	Chowai	CHOTAR	1/30 C-Iva	45.32	PB-IV	Final Felling
	Nither	-	-	-	-	-
2028-29	Arsu	-	-	-	-	-
	Chowai	KALANDI DHAR	1/32 C-Ib	9.31	PB-IV	Final Felling
	Nither	-	-	-	-	-
2029-30	Arsu	-	-	-	-	-
	Chowai	BAGIGLAI PANEEO	1/35 C-II	15.38	PB-IV	Final Felling
	Nither	-	-	-	-	-

2.21 Subsidiary silvicultural operations, cleaning and thinning:

Following subsidiary silvicultural operations are prescribed:-

2.21.1 Subsidiary silvicultural operations in PB-I

The following subsidiary operations will be carried out soon after the fellings in this Periodic block.

- (a) Disposal of felling refuse in accordance with the instructions lay down in Punjab Forest leaflet No. 6 shall be referred to for details.

- (b) Removal of trees of inferior species interfering with the young regeneration, if any left unfelled.
- (c) Lopping of broad leaved species interfering with the growth of young crop of coniferous.
- (d) Cleaning in the existing regeneration patches and climber cutting should be carried out wherever necessary.
- (e) Shrub cutting shall be done wherever needed for providing clean seed bed.
- (f) The villagers should be encouraged to collect the left out material from the sold lot, so as to reduce the cost.
- (g) Unfit refuse should be burnt under control which will provide a clean bed and also act as stimulant to boost up regeneration.

2.21.2 Artificial regeneration: Effective closure coupled with judicious manipulation of the canopy is very important, to induce good natural regeneration. Although by creating optimum light conditions and effective closure, natural regeneration is expected to come up but still to speed it up, artificial regeneration should be taken up in hand and then immediately without waiting for natural regeneration to come out. The technique of artificial regeneration is described in Punjab Forest Leaflet No. 4 and Himachal Pradesh Forest Manual Volume IV and shall be followed. The natural regeneration, however, depends on good seed year which may not synchronize with the year of fellings. Thus, if only natural regeneration relied upon, there is the danger of the area being invaded by weeds and bushes. In view of these impediments, artificial sowing and planting will be taken up immediately after fellings. This will on one hand reduce the period of closure and on the other restock the area expeditiously.

Temporary nursery of Deodar, Fir, Spruce and broad leaved species like Walnut, Horse chestnut, Poplar etc. should be laid at least in advance in the proximity to the area to be felled. Each of the felled area will be planted up in rainy season following the year of exploitation. Subject to the year of fellings, sowing of this species can be taken up even during the year of fellings. The nursery should be extended to the subsequent years depending upon regeneration. The guidelines issued by PrCCF HP. regarding nursery techniques for raising the good Deodar seedlings should be followed and plants less than 25 cms in height should not be planted at all. The patch/line sowing of Kail will be done on the dry and exposed sites where Deodar is not expected to do well. No attempt should be made to convert Spruce and Silver Fir forest into Deodar except in tension belt below 2400 mts. where site conditions are favourable for Deodar. Similarly, broad leaved species should be planted along nalas and in moist location where these grow naturally as well. The technique of raising Deodar and Kail is well established. However, Punjab Forest Manual technical order No. 3 and 4 along with Himachal Pradesh Forest Manual Volume IV Should also be consulted.

Its also important to note that the locality factors are favourable to natural regeneration in the areas where plants like Sarcococa, Strawberry, Viola, Indigofera and Desmodium etc. predominates in the ground flora but do not form dense cover. In such areas reliance can be placed on natural regeneration also to some extent. On the other hand in the areas where weeds/shrubs like Iris, Berberis, Strobilanthes, Spirea and Placanthus are dominant, the conditions are quite unsuitable. Artificial regeneration shall have to be mainly relied upon in such refractory areas. However, it must always be remembered that the more quickly an area is regenerated after seeding felling, lesser will be the overall expenditure and the area will be ready for being thrown open to grazing earlier.

It is also pointed out that it is futile to attempt to fill Thaches/Pats and shallow rocky southern and south west slopes with deodar where at best an open crop of Kail is all that nature intended. Moreover, these grassy plots in the forest areas is of immense value of grazing ground to the villages and keep them contended whereas their value to the forest department is at best secondary.

2.21.3 Planting Programme: The yield prescribed from the forest area in this Working Circle is directly proportionate to area planted successfully. Any slackness in plantation is going to reduce for the forest area for obtaining the prescribed yield. To achieve this objective detail planting programme has been given in the plantation (overlapping) Working Circle.

2.21.4 Tending operations: Young regeneration has to be nursed and tended so as to produce high quality of timber. The tending is the most essential silvicultural operation in the young plantation area. However, the cost of tending operation is more than repaid by production of high quality stems and stands.

2.21.5 Weeding: All the regeneration areas should be properly weeded out in the infancy. Normally two weeding, one in June-July and another in August-September are considered sufficient for young plantations. Number and frequency of weeding depends upon the incidence of bushes and weeds as also on the condition of regeneration. If more than two weeding are necessitated, these should be carried out without any hesitation for the betterment of the crop. The weeding should be done judiciously and carefully and young plant should be freed of overhead shade.

2.21.6 Cleaning: It should be carried out in the early stages of plantations and should be continued till the area is suitable for thinnings, so as to produce healthy stems and minimize fire hazards. Best and vigorously growing stems should be retained. All forked, crooked, sickly and damaged stems should be removed in cleanings so as to provide growing space to better stems. An important point in cleanings is to never cut more than where it is absolutely necessary. In Deodar plantations, Kail has been found coming up naturally in plenty. Kail is two to three times faster than Deodar. Therefore, all Kail competing with healthy Deodar must be cut when it is young or else it may be too late as Deodar may be too suppressed to respond and reach sufficiently. The intensity of cleaning must aim at fairly repaid increment to make the young crop fire resistant within reasonable time and also not to permit the side branches to persist unnecessarily. The cleaning is prescribed in detail in technical order No. 1 of Punjab Forest Manual Volume III and must be studied thoroughly.

2.22 Other Regulations:

2.22.1 Fire Protection: The whole Working Circle will be under strict vigil against fire hazard. Preventive measure should be taken advance. Incendiary forest fires are very common and as such the forests are required to be strictly protected from these. The forests floor should be kept clean of inflammable material such as debris, unwanted bushes, weeds, needles and grass. The fire lines, inspection paths and bridle paths should be kept clean of needles especially during summer season. Fire watcher should be employed during dry month's relations with the local protection of the forest from fire. Besides this maintaining cordial relations with the local people and educating them properly with regard and to importance of forest conservation, rights and duties and social obligation as enshrined in Article 51 A(g) of the constitution of India read with Section 79 of the Indian Forest Act, 1927. The detail description is given in Chapter No. IX, the Forest Protection (Overlapping) Working Circle.

2.22.2 Grazing and grass cutting: Outside the regeneration areas, there will be no restriction on grass cutting. In all the PB-I areas under regeneration, grass cutting will not be allowed till the plants are at least 1 meter in height. Grass cutting in closed areas shall be allowed under the supervision of forest guard that no young, seedlings/sapling is cut. Grazing shall be strictly prohibited in the regeneration areas during the closure period under Section 30 (b) of Indian Forest Act, 1927.

2.22.3 Right Holder's Demand: Demand of right holder for timber will be met as per latest revised H.P. Govt. **Notification No. FFE-B-A (3) 4/2015 Dated: Shimla -2, the 26 February, 2016 (The notification is appended as Appendix-XXIII.** By this notification, now the right holders are entitled to get T.D for construction/repair of house and cow shed etc. from the forest directly in which such rights has been recorded in Forest Settlement Report and as per revised timber distribution policy. Rest of the demand of rights holders will be met from the forest as per the provision of Forest Settlement Report, 1921 and right and concessions shall be exercised strictly in accordance with the silviculture principles. Thus all rights can be exercised subject to silvicultural availability. No trees should be marked from PB-I area after the marking of seedling fellings have been done till the regeneration is fully established. Trees should be marked strictly in accordance with the silvicultural principles and not necessarily according to the convenience of right holders. No trees should be marked from the PB-I area. From other PBs, the trees to be marked to meet out the demand of right holder should be such as are required to be removed during the course of thinning and improvement fellings and final fellings. The trees can be removed / felled from forest irrespective of the prescribed year of fellings. All the trees marked to meet the demand of right holders shall count towards the prescribed yield. Dry and fallen trees should primarily be utilized to meet the right holders demand etc.

2.24.4 Closures: After the seedling fellings are over, the all PB-I areas should be closed immediately till the regeneration is established. The area will have to be closed for grazing till the regeneration is established. Normally this period is 10-15 years, Govt. notification for such closure should be got issued under Section 30 (b) of Indian Forest Act, 1927 well in time after approval of felling programme by the competent authority to avoid any litigation.

2.22.5 Lopping: Lopping generally is heavy near habitation and also in those forests which are on the road side or approach to road side etc. It should be stopped immediately, as it makes trees susceptible to disease and retards growth in future. However, lopping may be allowed to the right holders strictly as per the provision of Forest Settlement Report, 1921 and action as per the provision of Indian Forest Act, 1927 should be taken if any person or authority or agent violated the rules or provision of Forest Settlement Report, 1921. The detail/description is given in Chapter-IX in the Forest Protection (overlapping) Working Circle.

2.22.6 Regeneration Survey: The regeneration survey of felled PB-I areas shall be carried out every year till the stock is established. If regeneration is in adequate further fellings will be curtailed for the next year. The reasons for failure should be detailed and corrective measures taken. The regeneration should be made to keep pace with the fellings and in case there are short falls on this account with reference to the prescription of the Working Plan, the further fellings should not be carried out and deferred till the problem is resolved.

CHAPTER III

THE FIR / SPRUCE WORKING CIRCLE

3.1 General Constitution:

This Working Circle includes all the Reserve Forests, Ist Class Demarcated, IInd Class Demarcated and IIIrd Class Forests (Undemarcated Protected Forests) which predominantly contain the pure silver Fir and Spruce or in a mixture containing Fir and Spruce with 60% or more as component and are fit for working under the Indian Punjab Shelter wood System have been allotted to this Working Circle. The basic constitution of this Working Circle remains the same as in the earlier plan.. This Working Circle covers an area of **2635.32 Hac.**

3.2 General Character of Vegetation:

The detailed description of the forests is given in Chapter II-A of Part I and the forests included in this Working Circle mainly conform the Champion and Seths type Group 12 (Himalayan Moist-temperate mixed conifer forests), 12 C1d (Western mixed coniferous forest) (Spruce, Blue pine silver forest,) 12/C2b (West Himalayan upper Oak/Fir forests) and Group 14 (Sub alpine forest) 14/C1 (West Himalayan Sub Alpine Birch / Fir forests) (Betula / Abies), 14C1a, C1b (West Himalayan sub alpine Birch / Fir Forest). The Silver Fir and Spruce are the main species of this Working Circle. The Silver Fir predominates in the upper parts and spruce in lower down. In the cooler localities and depressions, Silver Fir descends up to 2500 meters, whereas Spruce penetrates higher along warmer Spurs. Some Deodar is also found in groups on rocks and precipitous areas and Kail on exposed Spurs ridges and in the lower reaches of forests. In the remote Forest of Kurpan Khad *Betula* occurs pure as long the upper tree line. Yew (*Taxus baccatta*) forms an important under storey. Broad leaved species like Acer, Prunus, Juglans, and Aesculus & Taxus etc. occupy the sizeable areas along nalas depressions and moist sites. Kharsu, Oak is found mixed with Fir or pure in top upper belt. The forests are very much under stocked and there is preponderance of mature to over mature trees. Detailed examination of the Forests reveals that the younger age classes though somewhat deficient are not all together absent and fair amount of advance growth and polls can be seen wherever the canopy is slightly open. The ground is sloppy and soil is well drained. These forests had been exploited in the past for packing cases. Many of the over mature trees are unsound and unhealthy which has been retained while meeting the requirement of local saw millers for manufacturing of packing cases. Natural regeneration in the Silver Fir and Spruce forest is generally deficient owing to several inhibiting factors such as heavy weed growth of *Desmodium tiliaefolium*, *Strobilanthes Species* and *Arundinaria fulcata* etc. However, good examples of natural regeneration can be seen in 2/19 Mandrow, R/3 Jujuth, C-IIIb and 1/5 Kandushilla, C-Ib of Arsu Range. The felling refuse of the past fellings and salvage removals is very heavy and the areas are also heavily grazed. The forests are covered with snow for several months in winter. The silver fir regenerates itself freely whenever the Oak and other broad leaved trees form a light under storey in the forests.

3.3 Special objects of management:

Without prejudice to general objects of managements, the special objects of managements of the forest allotted to this Working Circle are:

- (i) To restock the areas deficient in regeneration either naturally or through artificial means.
- (ii) Gradual conversion of irregular stock to normal stock thus to build up growing stock.
- (iii) To improve the existing Forest covers for soil and water conservation.

- (iv) To obtain normal forests with normal distribution of age classes as far as possible.
- (v) To restock all the poorly stocked areas and blank patches by natural and artificial means.
- (vi) To improve the biodiversity of the areas.
- (vii) To achieve progressively increasing sustained yield of Fir and Spruce timber consistent with the scientific management.

3.4 Areas statement:

The total area of this Working Circle is **2635.32hac.** this works out to be **4.91%** of the total area of the division. The Range wise distribution of these forests is tabulated in table No. 3.1

Table No. 3.1

Name of Range	Area in Hac.				
	RFs	DPFs Ist Class	DPFs IIInd Class	IIIrd Class	Total
Arsu	144.06	74.86	428.57	0	647.49
Chowai	0	971.25	627.27	0	1598.52
Nither	0	288.14	101.17	0	389.31
Total	144.06	1334.25	1157.01	0	2635.32

The forest wise detail of specific allotment is given in **Appendix – I.**

3.5 Blocks and compartments:

No change in the existing compartments and sub compartments has been made and the number has been kept as such as in the Negi's Working Plan under revision.

3.6 Felling series:

One Felling series has been formed i.e. **Sutlej felling series**, conforming to the territorial jurisdiction of Anni Forest Division.

3.7 Analysis and valuation of the crop:

Except for the converted crop during the period of previous plans (before the ban on green felling) the crop is irregular having all the age classes in the same areas. The converted crop, however, is generally well stocked having more or less represented almost equally, generally in mixture and sometimes as pure crop of Fir and Spruce separately. Deodar and Kail trees are also found in groups on rocks and precipitous on exposed spurs respectively. Broad leaved species like Acer, Prunus, Juglans, and Aesculus etc. occupy the sizeable areas along nalas depressions, Kharsu Oak is found mixed with Fir or pure in top upper belt. The regeneration of Fir and Spruce is deficient owing to the several inhibiting factors like heavy weed growth, accumulation of heavy felling refuse and biotic interferences of which grazing and fires are the most serious.

3.7.1 Stock Map: The stock maps on 4"=1 Miles scale, have been prepared for all the forests separately.

3.7.2 Density: The crown density of each compartment has been estimated occularly and has been recorded in respective compartments history files. The average density of the crop varies from 0.3 to 0.6.

3.7.3 Site quality: The site quality of the crop varies from place to place overall quality conform to II/III of the FRI quality classes. The site quality of individual compartments/ sub-compartment has been indicated in the compartment history files.

3.7.4 Age classes:-The crop is very irregular. There is predominance of middle aged and mature to over mature classes. The overall age condition is tabulated in table No. 3.2

Table No 3.2

Particular	Young, 10-29 cms	Middle aged, 30-59 cms	Mature & over Mature 60 cms& above
Stems	182320	332610	187060
Volume	24106	570522	1219689

3.7.5 Enumerations: As given in the Chapter-VIII under paragraph 8.8 sampled enumeration was carried out on the grid system bases in the Sample IDs (Plots) of size 0.1 Ha each. The whole of the area of the Anni Forest Division was divided into grids and total 28Nos. Sample plots have been done by sampling in all PB's areas. The results have been analyzed statistically. The results of enumerations are given in **Appendix No- VII**. The growing stock has been assessed / extrapolated and is also given in **Appendix No-XI**.

Table No-3.3

Species wise No. and Volume in cubic mts. (Estimated / extrapolated growing stock) for Fir/Spruce Working Circle

PB-I (Area in Ha. =506.27)														
Species wise No. and Volume in m3. (Estimated / Extrapolated growing stock) for Fir/Spruce Working Circle														
Sr. No	Species Code	Species		10-20 V	20-30 IV	30-40 III	40-50 IIA	50-60 IIB	60-70 IA	70-80 IB	80-90 IC	90-100 ID	100 over IE	Total
1	241	Deodar	Number	1841	920	1381	1841	460	920	460	0	0	0	7824
			Volume in m3	110.46	128.87	579.91	2338.05	1109.19	3258.54	2213.78	0.00	0.00	0.00	9738.79
2	926	Kail	Number	1841	7824	4142	920	1381	1381	0	920	0	0	18410
			Volume in m3	110.46	1095.38	1739.73	1169.02	3327.57	4887.81	0.00	5605.79	0.00	0.00	17935.77
3	929	Chil	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
4	2	Fir	Number	920	3682	5063	4602	3222	5063	460	1841	460	920	26234
			Volume in m3	55.23	515.47	4303.30	7824.17	10019.54	25819.77	3258.54	15629.94	4298.69	8597.39	80322.04
5	921	Spruce	Number	2761	6904	7364	10586	4602	7364	3222	920	1841	460	46025
			Volume in m3	165.69	966.52	6259.34	17995.60	14313.63	37556.03	22809.76	7814.97	17194.77	4298.69	129375.00
6	1162	Taxus	Number	1841	3222	0	0	0	0	0	0	0	0	5063
			Volume in m3	191.46	753.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	945.34
7	965	Bird cherry	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
8	19	Maple	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
9	651	Walnut	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
10	38	Aescules	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0

11	1010	Ban oak	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
12	1017	Kharshu Oak	Number	920	920	0	0	460	460	460	0	0	0	3222
			Volume in m3	123.35	0.00	0.00	0.00	1380.74	2117.13	2899.55	0.00	0.00	0.00	6520.76
13	1006	Mohru Oak	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
14	1038	Rhododendron	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
15	2000	Other B/L	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
		G.Total	Number	10125	23473	17950	17950	10125	15188	4602	3682	2301	1381	106777
			Volume in m3	756.64	3460.13	12882.27	29326.84	30150.68	73639.27	31181.63	29050.69	21493.46	12896.08	244837.69

PB-II (Area in Ha. =536.20)														
Species wise No. and Volume in m3. (Estimated / Extrapolated growing stock) for Fir/Spruce Working Circle														
Sr. No	Species Code	Species		10-20 V	20-30 IV	30-40 III	40-50 IIA	50-60 IIB	60-70 IA	70-80 IB	80-90 IC	90-100 ID	100 over IE	Total
1	241	Deodar	Number	6256	1787	2681	894	894	894	1787	0	1787	0	16980
			Volume in m3	375.34	250.23	1126.02	1134.96	2153.74	3163.58	8597.07	0.00	12654.32	0.00	29455.25
2	926	Kail	Number	0	894	2681	1787	0	0	0	0	0	0	5362
			Volume in m3	0.00	125.11	1126.02	2269.91	0.00	0.00	0.00	0.00	0.00	0.00	3521.05
	929	Chil	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	2	Fir	Number	894	1787	6256	6256	7149	5362	2681	1787	0	1787	33959
			Volume in m3	125.11	250.23	5317.32	10634.63	22234.43	27346.20	18981.48	15174.46	0.00	16693.69	116757.55

4	921	Spruce	Number	0	7149	15192	8043	12511	6256	4468	0	1787	894	56301
			Volume in m3	0.00	1000.91	15192.33	13673.10	47802.23	35442.82	36676.08	0.00	16693.69	8346.85	174828.01
5	1162	Taxus	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	965	Bird cherry	Number	0	0	0	894	0	0	0	0	0	0	894
			Volume in m3	0.00	0.00	0.00	1161.77	0.00	0.00	0.00	0.00	0.00	0.00	1161.77
7	19	Maple	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	651	Walnut	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	38	Aescules	Number	0	0	0	894	0	894	0	0	894	0	2681
			Volume in m3	0.00	0.00	0.00	1193.94	0.00	2888.33	0.00	0.00	6861.57	0.00	10943.84
10	1010	Ban oak	Number	1787	2681	2681	0	894	0	0	0	0	0	8043
			Volume in m3	559.44	1761.42	3219.88	0.00	2677.43	0.00	0.00	0.00	0.00	0.00	8218.16
11	1017	Kharshu Oak	Number	0	1787	1787	894	894	0	0	0	0	0	5362
			Volume in m3	0.00	536.20	1787.33	1608.60	2681.00	0.00	0.00	0.00	0.00	0.00	6613.13
12	1006	Mohru Oak	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
13	1038	Rhododendron	Number	894	894	0	0	0	0	0	0	0	0	1787
			Volume in m3	262.74	632.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	895.45
14	2000	Other B/L	Number	1787	0	0	0	0	0	0	0	0	0	1787
			Volume in m3	168.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	168.01
		G.Total	Number	11618	16980	31278	19661	22342	13405	8937	1787	4468	2681	133156
			Volume in m3	1490.64	4556.81	27768.90	31676.91	77548.82	68840.93	64254.63	15174.46	36209.59	25040.54	352562.22

PB-III (Area in Ha. =1444.33)														
Species wise No. and Volume in m3. (Estimated / Extrapolated growing stock) for Fir / Spruce Working Circle														
Sr. No	Species Code	Species		10-20 V	20-30 IV	30-40 III	40-50 IIA	50-60 IIB	60-70 IA	70-80 IB	80-90 IC	90-100 ID	100 over IE	Total
1	241	Deodar	Number	1444	7222	7222	1444	4333	4333	2889	0	0	1444	30331
			Volume in m3	86.66	1011.03	3033.09	1834.30	10442.51	15338.78	13894.45	0.00	0.00	10225.86	55866.68
2	926	Kail	Number	1444	0	0	1444	0	0	0	0	0	0	2889
			Volume in m3	86.66	0.00	0.00	1834.30	0.00	0.00	0.00	0.00	0.00	0.00	1920.96
3	929	Chil	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	2	Fir	Number	1444	7222	8666	17332	12999	8666	12999	8666	2889	0	80882
			Volume in m3	86.66	1011.03	7366.08	29464.33	40426.80	44196.50	92032.71	73574.17	26980.08	0.00	315138.36
5	921	Spruce	Number	40441	31775	44774	47663	38997	40441	20221	14443	5777	2889	287422
			Volume in m3	2426.47	4448.54	38058.10	81026.91	121280.39	206250.32	140302.22	120587.11	52732.49	23715.90	790828.45
6	1162	Taxus	Number	0	4333	8666	4333	0	0	0	0	0	0	17332
			Volume in m3	0.00	1013.92	4047.01	3557.38	0.00	0.00	0.00	0.00	0.00	0.00	8618.32
7	965	Bird cherry	Number	0	0	2889	1444	0	0	0	0	0	0	4333
			Volume in m3	0.00	0.00	2238.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2238.71
8	19	Maple	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
9	651	Walnut	Number	0	0	0	1444	0	0	0	0	0	0	1444
			Volume in m4	0.00	0.00	0.00	2166.50	0.00	0.00	0.00	0.00	0.00	0.00	2166.50
10	38	Aescules	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	1010	Ban oak	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	1017	Kharshu Oak	Number	11555	2889	0	0	0	0	0	0	0	0	14443
			Volume in m3	1548.32	866.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2414.92

13	1006	Mohru Oak	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	1038	Rhododendron	Number	0	1444	0	0	0	0	0	0	0	0	1444
			Volume in m3	0.00	424.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	424.63
15	2000	Other B/L	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		G.Total	Number	56329	54885	72217	75105	56329	53440	36108	23109	8666	4333	440521
			Volume in m3	4234.78	8775.75	54743.00	119883.72	172149.69	265785.61	246229.38	194161.28	79712.57	33941.76	1179617.53

PB-IV (Area in Ha. =148.52)														
Sr. No	Species Code	Species		10-20 V	20-30 IV	30-40 III	40-50 IIA	50-60 IIB	60-70 IA	70-80 IB	80-90 IC	90-100 ID	100 over IE	Total
1	241	Deodar	Number	2227.8	2227.8	2227.8	1485.2	1485.2	0	0	0	0	0	9653.8
			Volume in m3	133.668	311.892	935.676	1886.204	3579.332	0	0	0	0	0	6846.772
2	926	Kail	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
3	929	Chil	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m4	0	0	0	0	0	0	0	0	0	0	0
4	2	Fir	Number	0	0	0	1485.2	0	0	0	0	0	0	1485.2
			Volume in m3	0	0	0	2524.84	0	0	0	0	0	0	2524.84
5	921	Spruce	Number	2970.4	1485.2	742.6	1485.2	742.6	0	2227.8	742.6	0	0	10396.4
			Volume in m2	178.224	207.928	631.21	2524.84	2309.486	0	15772.824	6304.674	0	0	27929.186
6	1162	Taxus	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m4	0	0	0	0	0	0	0	0	0	0	0
7	965	Bird cherry	Number	0	0	0	0	0	0	0	0	0	0	0

			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
8	19	Maple	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
10	651	Walnut	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m4	0	0	0	0	0	0	0	0	0	0	0
11	38	Aescules	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
12	1010	Ban oak	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
13	1017	Kharshu Oak	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
14	1006	Mohru Oak	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
15	1038	Rhododendron	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
16	2000	Other B/L	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
		G.Total	Number	5198.2	3713	2970.4	4455.6	2227.8	0	2227.8	742.6	0	0	21535.4
			Volume in m3	311.892	519.82	1566.886	6935.884	5888.818	0	15772.824	6304.674	0	0	37300.798

Table No.3.4

General Abstract Growing Stock in all PBs

All PBs (Area in Ha. =2635.32)														
Species wise No. and Volume in m3. (Estimated / Extrapolated growing stock) for Fir / Spruce Working Circle														
Sr. No	Species Code	Species		10-20 V	20-30 IV	30-40 III	40-50 IIA	50-60 IIB	60-70 IA	70-80 IB	80-90 IC	90-100 ID	100 over IE	Total
1	241	Deodar	Number	11769	12157	13511	5664	7172	6147	5136	0	1787	1444	64789
			Volume in m3	706.13	1702.02	5674.70	7193.51	17284.77	21760.90	24705.31	0.00	12654.32	10225.86	101907.50
2	926	Kail	Number	3285	8718	6823	4152	1381	1381	0	920	0	0	26660
			Volume in m3	197.12	1220.50	2865.75	5273.24	3327.57	4887.81	0.00	5605.79	0.00	0.00	23377.77
3	929	Chil	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	2	Fir	Number	3258	12691	19984	29675	23370	19091	16140	12294	3349	2708	142561
			Volume in m3	267.00	1776.73	16986.69	50447.98	72680.77	97362.47	114272.73	104378.57	31278.78	25291.08	514742.79
5	921	Spruce	Number	46173	47313	68073	67777	56853	54061	30138	16106	9406	4243	400144
			Volume in m3	2770.39	6623.89	60140.98	115220.45	185705.74	279249.17	215560.88	134706.75	86620.95	36361.44	1122960.64
6	1162	Taxus	Number	1841	7555	8666	4333	0	0	0	0	0	0	22395
			Volume in m3	191.46	1767.80	4047.01	3557.38	0.00	0.00	0.00	0.00	0.00	0.00	9563.66
7	965	Bird cherry	Number	0	0	2889	2338	0	0	0	0	0	0	5227
			Volume in m3	0.00	0.00	2238.71	1161.77	0.00	0.00	0.00	0.00	0.00	0.00	3400.48
8	19	Maple	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	651	Walnut	Number	0	0	0	1444	0	0	0	0	0	0	1444
			Volume in m3	0.00	0.00	0.00	2166.50	0.00	0.00	0.00	0.00	0.00	0.00	2166.50
10	38	Aescules	Number	0	0	0	894	0	894	0	0	894	0	2681

			Volume in m3	0.00	0.00	0.00	1193.94	0.00	2888.33	0.00	0.00	6861.57	0.00	10943.84
11	1010	Ban oak	Number	1787	2681	2681	0	894	0	0	0	0	0	8043
			Volume in m3	559.44	1761.42	3219.88	0.00	2677.43	0.00	0.00	0.00	0.00	0.00	8218.16
12	1017	Kharshu Oak	Number	12475	5596	1787	894	1354	460	460	0	0	0	23027
			Volume in m3	1671.67	1402.80	1787.33	1608.60	4061.74	2117.13	2899.55	0.00	0.00	0.00	15548.81
13	1006	Mohru Oak	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	1038	Rhododen dron	Number	894	2338	0	0	0	0	0	0	0	0	3232
			Volume in m3	262.74	1057.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1320.09
15	2000	Other B/L	Number	1787	0	0	0	0	0	0	0	0	0	1787
			Volume in m3	168.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	168.01
		G.Total	Number	83270	99050	124415	117171	91024	82033	51875	29321	15436	8395	701989
			Volume in m3	6793.95	17312.50	96961.06	187823.36	285738.01	408265.81	357438.47	244691.11	137415.62	71878.37	1814318.25

3.7.6 Total growing stock per hac. Works out as under:-

Table No. - 3.5

P.B.	Area in hac.	Vol. of conifers in cums	Vol. of B.L. in cums	Vol./ha of conifers in cums	Vol/ha of B.L. in cums	Total vol/ha in cums
I	506.27	238316.94	6520.76	517.804	14.168	531.97
II	536.2	324561.86	28000.36	363.18	31.332	394.51
III	1444.33	1172372.77	7244.76	811.707	5.016	816.72
IV	148.52	37300.80	0	50.23	0	50.23
Total	2635.32	1772552.37	41765.88	1742.921	50.516	1793.44

Range wise no. of sample taken

Table No.3.6

Name of Range	Fir Spruce Working Circle				
	PB-I	PB-II	PB-III	PB-IV	Total
Arsu	1	1	3	1	5
Chowai	9	4	6	1	20
Nither	1	1	1	0	3
Total	11	6	10	2	28

3.8 Comparative Statement:

As discussed in the Para No. 3.7 above, sampled enumeration has been carried out on the grid system basis in the sample ID's (Plots) of the size 0.1 hac. each. The whole area of the Anni Forest Division was divided into grids and total 274 No's of sample were taken. Out of these, 24 No's of sample plots pertaining to this working Circle were enumerated down to 10 cm dbh and analyzed. Thereafter, the growing stocks have been assessed / extrapolated as given in the table no. 3.3, 3.4 & 3.5 respectively.

The abstract showing the growing stock of PB-I, PB-II, PB-III , PB-IV & Total for this working circle in Negi's working plan and in the plan under revision is given and tabulated in table No. 3.7, 3.8, 3.9, 3.10 & 3.11 respectively :-

Table No. 3.7

PB -I (Area 405.10hac.)

Species wise No. & volume in cum. (Estimated/extrapolated growing stock) for Fir/Spruce working Circle

Working Plan		No., Vol. in cum.	10-20'	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100 & above	Total No. & Vol.
Negi's Plan	Species		V	IV	III	IIA	IIB	IA	IB	IC	ID & above	
	Deodar	No.	1989	1416	999	615	371	433	357	332	292	6804
		Vol.	354.042	688.176	1033.965	1121.76	1059.205	1786.558	2012.766	2453.48	2740.128	13250.08
	Kail	No.	1632	763	425	230	86	71	37	23	7	3274
		Vol.	96.064	322.749	409.7	408.25	245.53	298.555	215.488	177.399	69.104	2242.839
	Fir/Spruce	No.	13081	8219	8491	6354	4988	4784	3475	2394	5221	57007
		Vol.	1770.448	3525.951	8831.68	12511.03	16046.4	22886.66	23174.78	21239.57	59488.07	169474.6
	Total No. Trees		16702	10398	9915	7199	5445	5288	3869	2749	5520	67085
	Total Vol.		2220.55	4536.88	10275.3	14041	17351.1	24971.8	25403	23870.4	62297.3	184968

PB -I (Area 506.27 hac.)

Species wise No. & volume in cum. (Estimated/extrapolated growing stock) for Fir/spruce working Circle

Working Plan		No., Vol. in cum.	10-20'	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100 & above	Total No. & Vol.
Current Plan	Species		V	IV	III	IIA	IIB	IA	IB	IC	ID	IE & above	
	Deodar	No.	1841	920	1381	1841	460	920	460	0	0	0	7824
		Vol.	110.46	128.87	579.91	2338.05	1109.19	3258.54	2213.78	0.00	0.00	0.00	9739
	Kail	No.	1841	7824	4142	920	1381	1381	0	920	0	0	18410
		Vol.	110.46	1095.38	1739.73	1169.02	3327.57	4887.81	0.00	5605.79	0.00	0.00	17936
	Chil	No.	0	0	0	0	0	0	0	0	0	0	0

		Vol.	0	0	0	0	0	0	0	0	0	0	0
	Fir	No.	920	3682	5063	4602	3222	5063	460	1841	460	920	26234
		Vol.	55.23	515.47	4303.30	7824.17	10019.54	25819.77	3258.54	15629.94	4298.69	8597.39	80322
	Spruce	No.	2761	6904	7364	10586	4602	7364	3222	920	1841	460	46025
		Vol.	165.69	966.52	6259.34	17995.60	14313.63	37556.03	22809.76	7814.97	17194.77	4298.69	129375
	Total No. Trees	No.	7363.93	19330.31	17949.57	17949.57	9665.15	14727.85	4142.21	3681.96	2301.23	1380.74	98493
	Total Vol.	Vol.	441.84	2706.24	12882.27	29326.84	28769.94	71522.14	28282.08	29050.69	21493.46	12896.08	237372

Table No. 3.8

PB -II (Area 536.20 hac.)

Species wise No. & volume in cum. (Estimated/extrapolated growing stock) for Fir/Spruce working Circle

Working Plan		No., Vol. in cum.	10-20'	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100 & above	Total No. & Vol.
	Species		V	IV	III	IIA	IIB	IA	IB	IC	ID & above	
Negi's Plan	Deodar	No.	0	2	0	0	0	0	0	2	0	4
		Vol.	0	4.14	0	0	0	0	0	14.78		18.92
	Kail	No.	2	0	0	0	0	0	0	0	0	2
		Vol.	0.0304	0	0	0	0	0	0	0	0	0.0304
	Fir/spruce	No.	786	1176	1405	1551	1440	1500	1264	1172	1412	11706
		Vol.	106.896	504.504	1461.2	3053.919	4632.48	7176	8429.616	10397.62	16088.33	51850.6
	Total No. Trees		788	1178	1405	1551	1440	1500	1264	1174	1412	11712
	Total Vol.		106.926	508.644	1461.2	3053.92	4632.48	7176	8429.62	10412.4	16088.3	51869.5

PB -II (Area 536.20 hac.)

Species wise No. & volume in cum. (Estimated/extrapolated growing stock) for Fir/spruce working Circle

Working Plan		No., Vol. in cum.	10-20'	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100 & above	Total No. & Vol.
Current Plan	Species		V	IV	III	IIA	IIB	IA	IB	IC	ID	IE & above	
	Deodar	No.	6256	1787	2681	894	894	894	1787	0	1787	0	16980
		Vol.	375.34	250.23	1126.02	1134.96	2153.74	3163.58	8597.07	0.00	12654.32	0.00	29455
	Kail	No.	0	894	2681	1787	0	0	0	0	0	0	5362
		Vol.	0.00	125.11	1126.02	2269.91	0.00	0.00	0.00	0.00	0.00	0.00	3521
	Chil	No.	0	0	0	0	0	0	0	0	0	0	0
		Vol.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
	Fir	No.	894	1787	6256	6256	7149	5362	2681	1787	0	1787	33959
		Vol.	125.11	250.23	5317.32	10634.63	22234.43	27346.20	18981.48	15174.46	0.00	16693.69	116758
	Spruce	No.	0	7149	15192	8043	12511	6256	4468	0	1787	894	56301
		Vol.	0.00	1000.91	15192.33	13673.10	47802.23	35442.82	36676.08	0.00	16693.69	8346.85	174828
	Total No. Trees	No.	7149.33	11617.67	26810.00	16979.67	20554.33	12511.33	8936.67	1787.33	3574.67	2681.00	112602
	Total Vol.	Vol.	500.45	1626.47	22761.69	27712.60	72190.39	65952.60	64254.63	15174.46	29348.01	25040.54	324562

Table No. 3.9

PB -III (Area 1545.50 hac.)

Species wise No. & volume in cum. (Estimated/extrapolated growing stock) for Fir/Spruce working Circle

Working Plan		No., Vol. in cum.	10-20'	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100 & above	Total No. & Vol.
	Species		V	IV	III	IIA	IIB	IA	IB	IC	ID & above	
Negi's Plan	Deodar	No.	205	123	101	134	111	141	90	59	67	1031
		Vol.	36.49	59.778	104.535	244.416	396.905	581.766	507.51	436.01	628.728	2996.14
	Kail	No.	2470	791	669	422	363	230	83	34	13	5075
		Vol.	375.44	334.593	644.916	749.05	1036.365	967.15	441.892	262.242	128.336	4939.98
	Fir/spruce	No.	15882	7178	6596	5675	4893	4164	3142	4132	3251	54913
		Vol.	2159.952	3079.362	6859.84	11174.08	15740.78	19920.58	20954	27787.1	37041.89	144718
	Total No. Trees		18557	8092	7366	6231	5367	4535	3315	4225	3331	61019
	Total Vol.		2571.88	3473.73	7609.29	12167.5	17174.1	21469.5	21903.4	28485.4	37799	152654

PB -III (Area 1444.33 hac.)

Species wise No. & volume in cum. (Estimated/extrapolated growing stock) for Fir/spruce working Circle

Working Plan		No., Vol. in cum.	10-20'	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100 & above	Total No. & Vol.
	Species		V	IV	III	IIA	IIB	IA	IB	IC	ID	IE & above	
Current Plan	Deodar	No.	1444	7222	7222	1444	4333	4333	2889	0	0	1444	30331
		Vol.	86.66	1011.03	3033.09	1834.30	10442.51	15338.78	13894.45	0.00	0.00	10225.86	55867
	Kail	No.	1444	0	0	1444	0	0	0	0	0	0	2889
		Vol.	86.66	0.00	0.00	1834.30	0.00	0.00	0.00	0.00	0.00	0.00	1921
	Chil	No.	0	0	0	0	0	0	0	0	0	0	0
		Vol.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
	Fir	No.	1444	7222	8666	17332	12999	8666	12999	8666	2889	0	80882
		Vol.	86.66	1011.03	7366.08	29464.33	40426.80	44196.50	92032.71	73574.17	26980.08	0.00	315138
	Spruce	No.	40441	31775	44774	47663	38997	40441	20221	14443	5777	2889	287422

		Vol.	2426.47	4448.54	38058.10	81026.91	121280.39	206250.32	140302.22	120587.11	52732.49	23715.90	790828
	Total No. Trees	No.	44774.23	46218.56	60661.86	67883.51	56328.87	53440.21	36108.25	23109.28	8665.98	4332.99	401524
	Total Vol.	Vol.	2686.45	6470.60	48457.27	114159.84	172149.69	265785.61	246229.38	194161.28	79712.57	33941.76	1163754

Table No. 3.10

PB -IV (Area 148.52 hac.)

Species wise No. & volume in cum. (Estimated/extrapolated growing stock) for Fir/Spruce working Circle

Working Plan		No., Vol. in cum.	10-20'	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100 & above	Total No. & Vol.
	Species		V	IV	III	IIA	IIB	IA	IB	IC	ID & above	
Negi's Plan	Deodar	No.	153	91	144	51	3	2	0	0	0	444
		Vol.	27.234	44.226	149.04	93.024	8.565	8.252	0	0	0	330.341
	Kail	No.	476	117	45	7	3	1	6	16	45	716
		Vol.	72.352	49.491	43.38	12.425	8.565	4.205	34.944	123.408	444.24	793.01
	Fir/spruce	No.	7508	4136	5288	1974	858	910	499	403	544	22120
		Vol.	1021.088	1774.344	5499.52	3886.806	2760.186	4353.44	3327.831	3575.416	6198.339	32397
	Total No. Trees		8137	4344	5477	2032	864	913	505	419	589	23280
	Total Vol.		1120.67	1868.06	5691.94	3992.26	2777.32	4365.9	3362.78	3698.82	6642.58	33520.3

PB -IV (Area 148.52 hac.)

Species wise No. & volume in cum. (Estimated/extrapolated growing stock) for Fir/spruce working Circle

Working Plan		No., Vol. in cum.	10-20'	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100 & above	Total No. & Vol.
Current Plan	Species		V	IV	III	IIA	IIB	IA	IB	IC	ID	IE & above	

	Deodar	No.	2227.8	2227.8	2227.8	1485.2	1485.2	0	0	0	0	0	9654
		Vol.	133.668	311.892	935.676	1886.204	3579.332	0	0	0	0	0	6847
	Kail	No.	0	0	0	0	0	0	0	0	0	0	0
		Vol.	0	0	0	0	0	0	0	0	0	0	0
	Chil	No.	0	0	0	0	0	0	0	0	0	0	0
		Vol.	0	0	0	0	0	0	0	0	0	0	0
	Fir	No.	0	0	0	1485.2	0	0	0	0	0	0	1485
		Vol.	0	0	0	2524.84	0	0	0	0	0	0	2525
	Spruce	No.	2970.4	1485.2	742.6	1485.2	742.6	0	2227.8	742.6	0	0	10396
		Vol.	178.224	207.928	631.21	2524.84	2309.486	0	15772.824	6304.674	0	0	27929
	Total No. Trees	No.	5198.20	3713.00	2970.40	4455.60	2227.80	0.00	2227.80	742.60	0.00	0.00	21535
	Total Vol.	Vol.	311.89	519.82	1566.89	6935.88	5888.82	0.00	15772.82	6304.67	0.00	0.00	37301

Table No. 3.11

All PB's (Area in Hac 2635.32)

Species wise No. & volume in cum. (Estimated/extrapolated growing stock) for Fir/spruce working Circle

Working Plan		No., Vol. in cum.	10-20'	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100 & above	Total No. & Vol.
Negi's Plan	Species		V	IV	III	IIA	IIB	IA	IB	IC	ID & above	
	Deodar	No.	2347	1632	1244	800	485	576	447	393	359	8283
		Vol.	417.766	796.32	1287.54	1459.2	1464.675	2376.576	2520.276	2904.27	3368.856	16595.5
	Kail	No.	4580	1671	1139	659	452	302	126	73	65	9067
		Vol.	543.8864	706.833	1097.996	1169.725	1290.46	1269.91	692.324	563.049	641.68	7975.86
	Spruce	No.	37257	20709	21780	15554	12179	11358	8380	8101	10428	145746
		Vol.	5058.384	8884.161	22652.24	30625.84	39179.85	54336.68	55886.23	62999.71	118816.6	398440
	Total No. Trees		44184	24012	24163	17013	13116	12236	8953	8567	10852	163096
	Total Vol.		6020.04	10387.3	25037.8	33254.8	41935	57983.2	59098.8	66467	122827	423011

All PB (Area hac. 2635.32 hac.)

Species wise No. & volume in cum. (Estimated/extrapolated growing stock) for Fir/spruce working Circle

Working Plan		No., Vol. in cum.	10-20'	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100 & above	Total No. & Vol.
Current Plan	Species		V	IV	III	IIA	IIB	IA	IB	IC	ID	IE & above	
	Deodar	No.	11769	12157	13511	5664	7172	6147	5136	0	1787	1444	64789
		Vol.	706	1702	5675	7194	17285	21761	24705	0	12654	10226	101908
	Kail	No.	3285	8718	6823	4152	1381	1381	0	920	0	0	26660
		Vol.	197	1220	2866	5273	3328	4888	0	5606	0	0	23378
	Chil	No.	0	0	0	0	0	0	0	0	0	0	0
		Vol.	0	0	0	0	0	0	0	0	0	0	0

	Fir	No.	3258	12691	19984	29675	23370	19091	16140	12294	3349	2708	142561
		Vol.	267	1777	16987	50448	72681	97362	114273	104379	31279	25291	514743
	Spruce	No.	46173	47313	68073	67777	56853	54061	30138	16106	9406	4243	400144
		Vol.	2770	6624	60141	115220	185706	279249	215561	134707	86621	36361	1122961
	Total No. Trees	No.	64485.69	80879.54	108391.83	107268.35	88776.16	80679.40	51414.93	29321.18	14541.87	8394.73	634154
	Total Vol.	Vol.	3940.63	11323.14	85668.12	178135.17	278998.85	403260.35	354538.92	244691.11	130554.05	71878.37	1762989

3.9 Silvicultural System:

The forest allotted to this Working Circle shall be managed under the Punjab Shelter Wood System with the provision of retention of compact group of well grown poles as a part of future crop. The system is described in Para 30 of the Punjab Forest leaflet No.11. Young crop up to 30 cm diameter and up to 0.1 hac. in extent of area shall be retained as part of future crop. In addition all Fir trees 30 cm dbh will also be retained as part of future crop. No felling will be done on steep, precipitous and rocky patches. The intensity of opening of Fir is less than in case of Deodar, though it should be remembered that at higher elevation it will require a fair amount of opening to bring in reproduction. The Spruce requires heavier opening than Fir, almost equal to Deodar. Efforts will be made to regenerate the area naturally with effective closure. Artificial planting will only be resorted where natural regeneration fails to come up in a reasonable time.

3.10 Choice of Species:

Silver Fir and Spruce shall be given preference and planted on the ground ideally suited to each species in the mixture of Fir and Spruce, preference will be given to Fir because as it occupies less space and consequently the number of tree per hac will be more. On spurs / warm aspects Kail will be preferred. Broad leaved species like Walnut, Maple, Bird Cherry and Poplar etc. shall be planted in moist location, depressions and nallas which are also important constituents and shall be favoured. The proportion of Deodar shall be increased on suitable ground between 2400 meters to 3000 meters on Northern aspects. The grazing frequency is responsible for absence of natural regeneration of Fir and Spruce. In addition heavy weed growth and accumulation of deep humus are known to be the factors inimical to regeneration of Fir and makes the conditions for natural regeneration unfavorable. It is, therefore, necessary that the steps must be taken to regenerate these forests with existing two species on the ground suited to each other while broad leaved species should be planted in depressions. In the lower parts of some of these forests in tension belt considerable quantities of Kail are some time present and

the Kail is not in frequently found invading into the Fir. Here it should be possible to increase the proportion of this more valuable species and on the ridges in the tension belt it is also possible to introduce little Deodar in the mixture. Beyond this it is mistake to try and force Deodar. Kail should not be sacrificed for Fir or Spruce. In short, the species best suited to the locality shall be preferred.

3.11 Regeneration period:

The Silver Fir and Spruce are expected to attain a height of 4 to 5 mts. in 30 years when they can be considered as established and beyond the damage by cattle. Therefore, regeneration period is fixed at 30 years.

3.12 Rotation period:

As in the Negi's plan the rotation is fixed at 120 years in this Working Circle. This period of 120 years is reasonable and economical for production of sizes of timber fit for all market demands. Therefore, rotation of 120 years is adopted, during which Fir and Spruce crop are expected to attain average crop dia meter of 45 cm to 55 cm respectively. These dimensions are quite suitable for the use to which the species are put Therefore, the rotation period 120 years is fixed in this working circle. The general quality class of the tract is II/III FRI.

3.13 Exploitable diameter:

Exploitable diameter fixed at 45 to 55 cm dbh being the most suited to yield better out turn in the form of sleeper size which fetches better price in the market. This is, however, a size to be aimed at, for the converted crop whereas the existing crop has such a large preponderance over mature stock that the exploitable size is only of academic interest.

3.14 Felling cycle:

The felling cycle of 30 years corresponding to the regeneration period of the plan will be adopted, keeping in view the silviculture requirements.

3.15 Division into periodic blocks:

Area of the whole Working Circle has been divided into four periodic Blocks as P.B.I, II, III and IV. The allotment is discussed as under:-

3.15.1 PB-I (506.27 Ha.): Area allotted to this periodic block contain predominantly middle aged to mature crops which has either not been regenerated fully or in which the regeneration felling has not been carried out. In addition to this the forests with preponderance of mature age classes is also allotted to PB-I and the forests with generally blanks are also allotted to PB-I. While all the forests having established pole crop with scattered matured trees has been allotted to PB-IV. No fellings were done in the plan under revision in PB-I. All such areas where artificial regeneration have been carried out, have also been put in PB-I. No change is made in PB-I area of the plan under revision. The distribution of number of trees and volume per hac. is tabulated in table No. 3.12

Table No. 3.12

Species wise distribution of number of trees and volume per hac.

PB-I (Area in Ha. =506.27)

Sr. No	Species Code	Species		10-20 V	20-30 IV	30-40 III	40-50 IIA	50-60 IIB	60-70 IA	70-80 IB	80-90 IC	90-100 ID	100 over IE	Total
1	241	Deodar	Number	4	2	3	4	1	2	1	0	0	0	17
			Volume in m3	0.24	0.28	1.26	5.08	2.41	7.08	4.81	0.00	0.00	0.00	21.16
2	926	Kail	Number	4	17	9	2	3	3	0	2	0	0	40
			Volume in m3	0.24	2.38	3.78	2.54	7.23	10.62	0.00	12.18	0.00	0.00	38.97
3	929	Chil	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
4	2	Fir	Number	2	8	11	10	7	11	1	4	1	2	57
			Volume in m3	0.12	1.12	9.35	17.00	21.77	56.10	7.08	33.96	9.34	18.68	174.52
5	921	Spruce	Number	6	15	16	23	10	16	7	2	4	1	100
			Volume in m3	0.36	2.10	13.60	39.10	31.10	81.60	49.56	16.98	37.36	9.34	281.10
6	1162	Taxus	Number	4	7	0	0	0	0	0	0	0	0	11
			Volume in m3	0.42	1.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.05
7	965	Bird cherry	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
8	19	Maple	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
9	651	Walnut	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
10	38	Aescules	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
11	1010	Ban oak	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
12	1017	Kharshu Oak	Number	2	2	0	0	1	1	1	0	0	0	7
			Volume in m3	0.268	0	0	0	3	4.6	6.3	0	0	0	14.168
13	1006	Mohru Oak	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
14	1038	Rhododen dron	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
15	2000	Other B/L	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
		G.Total	Number	22	51	39	39	22	33	10	8	5	3	232
			Volume in m3	1.64	7.52	27.99	63.72	65.51	160.00	67.75	63.12	46.70	28.02	531.97

3.15.2 PB-II (536.20 hac.): Forests, in which there is preponderance of maturing trees, have been allotted to this periodic block. No change is made in PB-II areas of the plan under revision. The distribution of number of trees and volume per hac. is tabulated in table No. 3.13

Table No. 3.13

Species wise distribution of number of trees and volume per hac.

PB-II (Area in Ha. =536.20)														
Sr. No	Species Code	Species		10-20 V	20-30 IV	30-40 III	40-50 IIA	50-60 IIB	60-70 IA	70-80 IB	80-90 IC	90-100 ID	100 over IE	Total
1	241	Deodar	Number	7	2	3	1	1	1	2	0	2	0	19
			Volume in m3	0.42	0.28	1.26	1.27	2.41	3.54	9.62	0.00	14.16	0.00	32.96
2	926	Kail	Number	0	1	3	2	0	0	0	0	0	0	6
			Volume in m3	0.00	0.14	1.26	2.54	0.00	0.00	0.00	0.00	0.00	0.00	3.94
3	929	Chil	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
4	2	Fir	Number	1	2	7	7	8	6	3	2	0	2	38
			Volume in m3	0.14	0.28	5.95	11.90	24.88	30.60	21.24	16.98	0.00	18.68	130.65
5	921	Spruce	Number	0	8	17	9	14	7	5	0	2	1	63
			Volume in m3	0.00	1.12	17.00	15.30	53.49	39.66	41.04	0.00	18.68	9.34	195.63
6	1162	Taxus	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	965	Bird cherry	Number	0	0	0	1	0	0	0	0	0	0	1
			Volume in m3	0.00	0.00	0.00	1.30	0.00	0.00	0.00	0.00	0.00	0.00	1.30
8	19	Maple	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	651	Walnut	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	38	Aescules	Number	0	0	0	1	0	1	0	0	1	0	3
			Volume in m3	0.00	0.00	0.00	1.34	0.00	3.23	0.00	0.00	7.68	0.00	12.25
11	1010	Ban oak	Number	2	3	3	0	1	0	0	0	0	0	9
			Volume in m3	0.63	1.97	3.60	0.00	3.00	0.00	0.00	0.00	0.00	0.00	9.20
12	1017	Kharshu Oak	Number	0	2	2	1	1	0	0	0	0	0	6
			Volume in m3	0.00	0.60	2.00	1.80	3.00	0.00	0.00	0.00	0.00	0.00	7.40
13	1006	Mohru Oak	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	1038	Rhododendron	Number	1	1	0	0	0	0	0	0	0	0	2
			Volume in m3	0.29	0.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
15	2000	Other B/L	Number	2	0	0	0	0	0	0	0	0	0	2
			Volume in m3	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19
		G.Total	Number	13	19	35	22	25	15	10	2	5	3	149
			Volume in m3	1.67	5.10	31.07	35.45	86.78	77.03	71.90	16.98	40.52	28.02	394.51

3.15.3 PB-III (1444.33 Ha.): The forests carrying pole to middle aged crops with few scattered matured and maturing trees has been allotted to this PB, as in plan under revision. No change has been made therein. The distribution of number of trees and volume per hac. is tabulated in table No. 3.14

Table No. 3.14

PB-III (Area in Ha. =1444.33)														
Sr. No	Species Code	Species		10-20 V	20-30 IV	30-40 III	40-50 IIA	50-60 IIB	60-70 IA	70-80 IB	80-90 IC	90-100 ID	100 over IE	Total
1	241	Deodar	Number	1	5	5	1	3	3	2	0	0	1	21
			Volume in m3	0.06	0.70	2.10	1.27	7.23	10.62	9.62	0.00	0.00	7.08	38.68
2	926	Kail	Number	1	0	0	1	0	0	0	0	0	0	2
			Volume in m3	0.06	0.00	0.00	1.27	0.00	0.00	0.00	0.00	0.00	0.00	1.33
3	929	Chil	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	2	Fir	Number	1	5	6	12	9	6	9	6	2	0	56
			Volume in m3	0.06	0.70	5.10	20.40	27.99	30.60	63.72	50.94	18.68	0.00	218.19
5	921	Spruce	Number	28	22	31	33	27	28	14	10	4	2	199
			Volume in m3	1.68	3.08	26.35	56.10	83.97	142.80	97.14	83.49	36.51	16.42	547.54
6	1162	Taxus	Number	0	3	6	3	0	0	0	0	0	0	12
			Volume in m3	0.00	0.70	2.80	2.46	0.00	0.00	0.00	0.00	0.00	0.00	5.97
7	965	Bird cherry	Number	0	0	2	1	0	0	0	0	0	0	3
			Volume in m3	0.00	0.00	1.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.55
8	19	Maple	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	651	Walnut	Number	0	0	0	1	0	0	0	0	0	0	1
			Volume in m3	0.00	0.00	0.00	1.50	0.00	0.00	0.00	0.00	0.00	0.00	1.50
10	38	Aescules	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	1010	Ban oak	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	1017	Kharshu Oak	Number	8	2	0	0	0	0	0	0	0	0	10
			Volume in m3	1.072	0.6	0	0	0	0	0	0	0	0	1.672
13	1006	Mohru Oak	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	1038	Rhododendron	Number	0	1	0	0	0	0	0	0	0	0	1
			Volume in m3	0	0.294	0	0	0	0	0	0	0	0	0.294
15	2000	Other B/L	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		G.Total	Number	39	38	50	52	39	37	25	16	6	3	305
			Volume in m3	2.93	6.08	37.90	83.00	119.19	184.02	170.48	134.43	55.19	23.50	816.72

3.15.4 PB-IV (148.52 hac.): All the Forests having young poles with scattered mother trees have been allotted to PB-IV as in the plan under revision. No change has been made therein. The species wise distribution in different classes is tabulated in table No.3.15.

Table No. - 3.15

Species wise distribution of number of trees and volume per hac.

PB-IV (Area in Ha. =148.52)														
Species wise No. and Volume in m3. (Estimated / Extrapolated growing stock) for Fir/Spruce Working Circle														
Sr. No	Species Code	Species		10-20 V	20-30 IV	30-40 III	40-50 IIA	50-60 IIB	60-70 IA	70-80 IB	80-90 IC	90-100 ID	100 over IE	Total
1	241	Deodar	Number	3	3	3	2	2	0	0	0	0	0	13
			Volume in m3	0.18	0.42	1.26	2.54	4.82	0.00	0.00	0.00	0.00	0.00	9.22
2	926	Kail	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	929	Chil	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	2	Fir	Number	0	0	0	2	0	0	0	0	0	0	2
			Volume in m3	0	0	0	3.4	0	0	0	0	0	0	3.4
5	921	Spruce	Number	4	2	1	2	1	0	3	1	0	0	14
			Volume in m3	0.24	0.28	0.85	3.40	3.11	0.00	21.24	8.49	0.00	0.00	37.61
6	1162	Taxus	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	965	Bird cherry	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	19	Maple	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	651	Walnut	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	38	Aescules	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	1010	Ban oak	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	1017	Kharshu Oak	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	1006	Mohru Oak	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	1038	Rhododendron	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	2000	Other B/L	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		G.Total	Number	7	5	4	6	3	0	3	1	0	0	29
			Volume in m3	0.42	0.70	2.11	9.34	7.93	0.00	21.24	8.49	0.00	0.00	50.23

3.15.5 General abstract of areas allotted PB wise: The PB wise allotment of the areas to different Ranges is tabulated in table No.:-3.16

Table No. - 3.16

Name of Range	FOREST CATEGORY	Allotment				
		PB1	PBII	PBIII	PBIV	TOTAL
Arsu	RF	0	111.69	32.37	0	144.06
	DPF (I Class)	8.9	0	65.96	0	74.86

	DPF (II Class)	0	0	328.61	99.96	428.57
	III Class Listed UPF	0	0	0	0	0
	Total	8.9	111.69	426.94	99.96	647.49
Chowai	RF	0	0	0	0	0
	DPF (I Class)	252.13	101.57	568.99	48.56	971.25
	DPF (II Class)	144.07	89.03	394.17	0	627.27
	III Class Listed UPF	0	0	0	0	0
	Total	396.2	190.6	963.16	48.56	1598.52
Nither	RF	0	0	0	0	0
	DPF (I Class)	0	233.91	54.23	0	288.14
	DPF (II Class)	101.17	0	0	0	101.17
	III Class Listed UPF	0	0	0	0	0
	Total	101.17	233.91	54.23	0	389.31
	G.Total	506.27	536.2	1444.33	148.52	2635.32

3.15.6 General Abstract of areas and Growing Stock P.B. wise

The general abstract of areas and Growing Stock P.B. wise is tabulated in table No.:-3.17

Table No. 3.17

Particulars	P.B.I	P.B.II	PB.III	PB.IV	Total
Area allotted (in hac.)	506.27	536.2	1444.33	148.52	2635.32
Growing Stock (M ³)	244837.69	352562.22	1179617.53	37300.80	1814318.25

3.16 Calculation of yield:

The yield has been calculated by volume for PB-I and PB-IV. Increment has been ignored for the reasons safety against fire and natural calamities and to serve as emergency reserve. No yield has been prescribed from PB-II as a safe guard and to build up the growing stock to be treated in next PB-I.

3.16.1 Yield from PB-I areas: The enumeration down to 10 cms dbh in 10 cms dia classes has been carried out in 11 numbers sample plots of size 0.1 Ha each forest of PB-I areas. The abstract of sample taken in PB-I areas are tabulated in table No.:- 3.18

Table No. 3.18

Sr. No.	Name of Range	Sample Taken
1.	Arsu	1
2.	Chowai	9
3.	Nither	1
	Total	11

The abstract showing the growing stock of class wise and species wise PB-I areas the details are given in the **Appendix No.-X**

Table No. 3.19

Species wise No. and Volume in cubic mts (Estimated growing stock) for Fir/Spruce Working Circle

PB-I (Area in Ha. =506.27)														
Sr. No	Species Code	Species		10-20 V	20-30 IV	30-40 III	40-50 IIA	50-60 IIB	60-70 IA	70-80 IB	80-90 IC	90-100 ID	100 over IE	Total
1	241	Deodar	Number	1841	920	1381	1841	460	920	460	0	0	0	7824
			Volume in m3	110.46	128.87	579.91	2338.05	1109.19	3258.54	2213.78	0.00	0.00	0.00	9738.79
2	926	Kail	Number	1841	7824	4142	920	1381	1381	0	920	0	0	18410
			Volume in m3	110.46	1095.38	1739.73	1169.02	3327.57	4887.81	0.00	5605.79	0.00	0.00	17935.77
3	929	Chil	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
4	2	Fir	Number	920	3682	5063	4602	3222	5063	460	1841	460	920	26234
			Volume in m3	55.23	515.47	4303.30	7824.17	10019.54	25819.77	3258.54	15629.94	4298.69	8597.39	80322.04
5	921	Spruce	Number	2761	6904	7364	10586	4602	7364	3222	920	1841	460	46025
			Volume in m3	165.69	966.52	6259.34	17995.60	14313.63	37556.03	22809.76	7814.97	17194.77	4298.69	129375.00
6	1162	Taxus	Number	1841	3222	0	0	0	0	0	0	0	0	5063
			Volume in m3	191.46	753.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	945.34
7	965	Bird cherry	Number	0	0	0	0	0	0	0	0	0	0	0

			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
8	19	Maple	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
9	651	Walnut	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
10	38	Aescules	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
11	1010	Ban oak	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
12	1017	Kharshu Oak	Number	920	920	0	0	460	460	460	0	0	0	3222
			Volume in m3	123.35	0.00	0.00	0.00	1380.74	2117.13	2899.55	0.00	0.00	0.00	6520.76
13	1006	Mohru Oak	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
14	1038	Rhododendron	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
15	2000	Other B/L	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
		G.Total	Number	10125	23473	17950	17950	10125	15188	4602	3682	2301	1381	106777
			Volume in m3	756.64	3460.13	12882.27	29326.84	30150.68	73639.27	31181.63	29050.69	21493.46	12896.08	244837.69

Calculation of the yield has been based on the volume of the trees of 40 cms dbh and over. Increment has been ignored. From the management point of view and theoretically the entire growing stock except the mother trees above 40 cms diameter should be available during the plan period. Since a compact group of poles shall be retained as advance growth and some trees will be left on broken and steep grounds, only a part of II and III/IV class trees will be available. Similarly, the yield from I and II class trees will be further restricted as some trees have to be retained as emergency reserve and fire insurance trees. The trees standing on blanks or over patches where regeneration has not established shall also be not available. Therefore, the yield on the basis of silvicultural availability is calculated as under:-

$$Y = \frac{C1V1+C2V2+C3V3}{P}$$

Where V1, V2 and V3 are the volumes of I class, II class trees and III and IV class trees respectively. P= Plan period i.e. 10 years.

C1, C2, C3 are the constants representing percentage of I class, II class and III class and IV class trees respectively estimated to be available for felling during the regeneration period. The values of constants of C1, C2, and C3 have been fixed as under after detailed examination of forests during field inspections. These figures are arrived at after analysis number of stems per hac and emerged after considering field conditions is tabulated in table No. 3.15.

Table No. 3.15

Species	C1	C2	C3
Deodar	0.3	0.2	0.2
Kail	0.3	0.2	0.2
Fir	0.3	0.2	0.2
Spruce	0.3	0.2	0.2

The above proportion is based on purely theoretical consideration. This combined with field observations gives well suiting proportions.

The yield is now calculated by Hufnagels formula as under:-

$$Y = \frac{C1V1+C2V2+C3V3}{P}$$

(Deodar) C1= Constant representing the fraction of volume of I class trees available for felling during the regeneration period. C1 has been taken as 0.3.

C2= Constant representing the fraction of volume of II class trees available for felling during period. C2 has been taken as 0.2.

C3= Constant representing the fraction of volume of IV and III class trees available for felling during period. C2 has been taken as 0.2.

(Deodar) V1= Volume of trees of I class trees of conifers = 5472.32 M³

V2= Volume of trees of II class trees of conifers = 3447.24 M³

V3= Volume of trees of IV and III class trees of conifers = 708.78 M³

P= Period of the plan is 10 year i.e. Working Plan period.

$$\text{Yield} = Y = \frac{C1V1+C2V2+C3V3}{P}$$

$$Y = \frac{0.3 \times 5472.32 + 0.2 \times 3447.24 + 0.2 \times 708.78}{10} = 247.29 \text{ or say } 245\text{M}^3$$

(Kail) C1= Constant representing the fraction of volume of I class trees available for felling during the regeneration period. C1 has been taken as 0.3.

C2= Constant representing the fraction of volume of II class trees available for felling during period. C2 has been taken as 0.2.

C3= Constant representing the fraction of volume of IV and III class trees available for felling during period. C2 has been taken as 0.2.

(Kail) V1= Volume of trees of I class trees of conifers = 10493.60M³

V2= Volume of trees of II class trees of conifers = 4496.60M³

V3= Volume of trees of IV and III class trees of conifers = 2835.11M³

P= Period of the plan is 10 year i.e. Working Plan period.

$$\text{Yield} = \frac{C1V1+C2V2+C3V3}{P}$$

$$Y = \frac{0.3 \times 10493.60 + 0.2 \times 4496.60 + 0.2 \times 2835.11}{10} = 461.44 \text{ or say } 460 \text{ M}^3$$

(Fir) C1= Constant representing the fraction of volume of I class trees available for felling during the regeneration period. C1 has been taken as 0.3.

C2= Constant representing the fraction of volume of II class trees available for felling during period. C2 has been taken as 0.2.

C3= Constant representing the fraction of volume of IV and III class trees available for felling during period. C2 has been taken as 0.2.

(Fir) V1= Volume of trees of I class trees of conifers = 57604.32 M³

V2= Volume of trees of II class trees of conifers = 17843.72M³

V3= Volume of trees of IV and III class trees of conifers = 4818.77M³

P= Period of the plan is 10 year i.e. Working Plan period.

$$\text{Yield} = \frac{C1V1+C2V2+C3V3}{P}$$

$$Y = \frac{0.3 \times 57604.32 + 0.2 \times 17843.72 + 0.2 \times 4818.77}{10} = 2181.37 \text{ or say } 2180 \text{ M}^3$$

(Spruce) C1= Constant representing the fraction of volume of I class trees available for felling during the regeneration period. C1 has been taken as 0.3.

C2= Constant representing the fraction of volume of II class trees available for felling during period. C2 has been taken as 0.2.

C3= Constant representing the fraction of volume of IV and III class trees available for felling during period. C2 has been taken as 0.2.

(Spruce) V1= Volume of trees of I class trees of conifers = 89674.22 M³

V2= Volume of trees of II class trees of conifers = 32309.23 M³

V3= Volume of trees of IV and III class trees of conifers = 7225.85M³

P= Period of the plan is 10 year i.e. Working Plan period.

$$\text{Yield} = \frac{C1V1+C2V2+C3V3}{P}$$

$$Y = \frac{0.3 \times 89674.22 + 0.2 \times 32309.23 + 0.2 \times 7225.85}{10} = 3486.92 \text{ or say } 3485 \text{ M}^3$$

Therefore, the annual yield of different species is summarized as under for P.B.I:

Table No. 3.20

Sr. No.	Species	Annual yield (in M3)
1	Deodar	245
2	Kail	460
3	Fir	2180
4	Spruce	3485
	Total	6370

3.16.2 Yield from PB-II: Strictly speaking, there should be no felling from this PB as this PB constitutes the future PB-II. However, past experience has shown that due to snow damage and wind thrown, salvage removals occur which also have to be accounted for. These removals have to be counted for in order to safe guard the future yield, no major fellings are prescribed and therefore, no yield has been calculated for this periodic block. As given in the Chapter-VIII under paragraph 8.7, the enumeration down to 10 cms dbh in 10 cms dia classes has been carried out in Six numbers sample plots of size 0.1 Ha each forest of PB-II areas. The abstract of sample taken in PB-II areas is tabulated in table No 3.17. All the trees in such units down to 10 cms dbh were enumerated in four numbers of PB-II areas.

Table No.3.21

Sr. No.	Name of Range	Sample Taken
1.	Arsu	1
2.	Chowai	4
3.	Nither	1
	Total	6

The detail of enumeration done in the sample areas are given in **Appendix-VII**

3.16.3 Intermediate yield from P.B.III: For conservative reasons, no yield is prescribed from PB-III areas. The demand of right holders used to be invariably met from the forests of this periodic block before imposition of ban on green fellings. Hence no green fellings are prescribed. However, salvage markings of dead and uprooted trees will be done to clear these forests from fire hazards. The removals will, however, count toward the yield of PB-I.

As given in the Chapter-VIII under paragraph 8.7, the enumeration down to 10 cms dbh in 10 cms dia classes has been carried out in Ten numbers sample plots of size 0.1 Ha each forest of PB-III areas. The abstract of sample taken in PB-II areas is tabulated in table No 3.18. All the trees in such units down to 10 cms dbh were enumerated in four numbers of PB-III areas.

Table No.3.22

Sr. No.	Name of Range	Sample Taken
1	Arsu	3
2	Chowai	6
3	Nither	1
	Total	10

The detail of enumeration done in the sample areas are given in **Appendix No.-VII.**

3.16.4 Yield from PB-IV Area: Mature and over mature trees of 70 cm dbh and over are out of place in this block. These are either deteriorating or frequently standing over or interfering with healthy young crops. Silviculturally all such trees will, however, not be available for felling as good many them stand on blank or rocky ground which must be spared. Even otherwise, it is unwise to remove all such trees with a view to safe guard the future yield. As such it is estimated that only 10% of trees 70 cm dbh and over shall be available for felling during the next 30 years period. The demand of right holders used to be invariably met from the forests of this periodic block before imposition of ban on green fellings. However, salvage markings of dead and uprooted trees will be done to clear these forests from fire hazards. The removals will, however, count toward the yield of PB-IV. Sampled enumeration down to 10 cms dbh classes has been carried out in Two numbers sample plots of size 0.1 Ha each forest of PB-IV areas and is tabulated in table No. 3.19.

Table No.3.23

Sr. No.	Name of Range	Sample Taken
1	Arsu	1
2	Chowai	1
3	Nither	0
	Total	2

The abstract of growing stock is tabulated in table No.3.24

Table No.3.24

PB-IV (148.52 Ha.)

Species Code	Species		10-20 V	20-30 IV	30-40 III	40-50 IIA	50-60 IIB	60-70 IA	70-80 IB	80-90 IC	90-100 ID	100 over IE	Total
241	Deodar	Number	2228	2228	2228	1485	1485	0	0	0	0	0	9654
		Volume in m3	133.67	311.89	935.68	1886.20	3579.33	0.00	0.00	0.00	0.00	0.00	6846.77
926	Kail	Number	0	0	0	0	0	0	0	0	0	0	0
		Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
929	Chil	Number	0	0	0	0	0	0	0	0	0	0	0
		Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	Fir	Number	0	0	0	1485	0	0	0	0	0	0	1485
		Volume in m3	0.00	0.00	0.00	2524.84	0.00	0.00	0.00	0.00	0.00	0.00	2524.84
921	Spruce	Number	2970	1485	743	1485	743	0	2228	743	0	0	10396
		Volume in m3	178.22	207.93	631.21	2524.84	2309.49	0.00	15772.82	6304.67	0.00	0.00	27929.19
1162	Taxus	Number	0	0	0	0	0	0	0	0	0	0	0
		Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
965	Bird cherry	Number	0	0	0	0	0	0	0	0	0	0	0
		Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	Maple	Number	0	0	0	0	0	0	0	0	0	0	0
		Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
651	Walnut	Number	0	0	0	0	0	0	0	0	0	0	0
		Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
38	Aescules	Number	0	0	0	0	0	0	0	0	0	0	0

		Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1010	Ban oak	Number	0	0	0	0	0	0	0	0	0	0	0
		Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1017	Kharshu Oak	Number	0	0	0	0	0	0	0	0	0	0	0
		Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1006	Mohru Oak	Number	0	0	0	0	0	0	0	0	0	0	0
		Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1038	Rhododendron	Number	0	0	0	0	0	0	0	0	0	0	0
		Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2000	Other B/L	Number	0	0	0	0	0	0	0	0	0	0	0
		Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	G.Total	Number	5198	3713	2970	4456	2228	0	2228	743	0	0	21535
		Volume in m3	311.89	519.82	1566.89	6935.88	5888.82	0.00	15772.82	6304.67	0.00	0.00	37300.80

That all the trees above 40 cms. In diameter are out of place in this PB, if the regeneration has established and can be removed during the period of plan. Removal of all Ist and IInd class trees cannot be done as we must retain trees standing on precipitous and broken ground, retain trees as fire insurance and national emergency reserves. However, this is not possible due to silvicultural considerations also. Therefore, the trees standing on broken and precipitous ground cannot be removed. Similarly the trees standing on periphery of the blanks and along the boundary or in the nallas shall not be available for fellings. Beside this many of the II class trees standing amongst groups of pole retained as part of future crop will not be removed. Therefore, keeping in view the condition of forest and observation made during inspection of forests, it is estimated that not more than 50 % of the volume of I class trees shall be available for all species except in case of Deodar only 30 % of the volume of I class trees shall be available felling during the period of plan. In addition to this another 10 % of the volume of IV and III class trees shall be available under thinning. The annual yield is therefore calculated:-

$$\text{Annual Yield (AY)} = \frac{V_1 \times 50/100 + V_2 \times 10/100}{P}$$

Where V1 is volume of I and II class trees.

V2 is volume of III & IV class trees. P is Plan period which is 10 years.

The yield is, therefore, calculated as under:

(i) **(Deodar)** $AY = \frac{V_1 \times 30/100 + V_2 \times 10/100}{10}$

10

V1 = 5464.54 M3

V2 = 1247.57 M3

5464.54 x 30% + 1247.57 x 10%

Therefore, AY = $\frac{5464.54 \times 30\% + 1247.57 \times 10\%}{10} = 176.44 \text{M}^3$ or say 175M³

(ii) **(Kail)** $AY = \frac{V_1 \times 50/100 + V_2 \times 10/100}{10}$

V1 = 0.00M3

V2 = 0.00M³

Therefore, AY = $\frac{0.00 \times 75\% + 0 \times 10\%}{0} = 0 \text{M}^3$ or say 0 M³

$$\text{(iv) (Fir) AY} = \frac{V1*50/100 + V2*10/100}{10}$$

$$V1 = 2554.84 \text{ M}^3$$

$$V2 = 0.00 \text{ M}^3$$

$$\text{Therefore, AY} = \frac{2524.84 \times 40\% + 0.00 \times 10\%}{10} = 100.99 \text{ M}^3 \text{ or say } 100 \text{ M}^3$$

$$\text{(v) (Spruce) AY} = \frac{V1*50/100 + V2*10/100}{10}$$

$$V1 = 26911.82 \text{ M}^3$$

$$V2 = 839.14 \text{ M}^3$$

$$\text{Therefore, AY} = \frac{26911.82 \times 40\% + 839.14 \times 10\%}{10} = 1084.86 \text{ M}^3 \text{ or say } 1085 \text{ M}^3$$

Therefore, the annual yield of different species is summarized as under for P.B.IV

Table No. 3.25

Sr. No.	Species	Annual yield (in M3)
1	Deodar	175
2	Kail	0
3	Fir	100
4	Spruce	1085
	Total	1360

3.17 Total prescribed Annual yield:

The total Annual yield from the forests of this Working Circle is prescribed as under and is tabulated in table No.3 .26.

Table No. 3.26

Species	PBI	PB-IV	Total
Deodar	245	175	420
Kail	460	0	460
Fir	2180	100	2280
Spruce	3485	1085	4570
Total	6370	1360	7730

3.18 Control of yield:

All the removals of whatever nature down to 10 cms dbh shall count towards yield of this Working Circle. Deviation for a year, period of five year and plan period shall not exceed 10% of the annual prescribed yield. Removals will depend upon the pace of regeneration. Moreover, no commercial fellings will be undertaken until there is polythene raised stock in nursery of 3.5 to 4.5 years for Fir, 2.5 to 3.5 years for Spruce and for Deodar 2.5 years. The regeneration survey shall be carried out once in five year and if it indicates that the specification of regeneration has not

been achieved, then fellings shall be deferred till such time as desired result of regeneration is achieved.

3.19 Method of executing felling:

3.19.1 In PB-I Areas:

The marking shall be carried out by Divisional Forest Officer or his ACF and invariably checked by the Conservator of Forests. The technique of carrying of regeneration marking is described in the Punjab Forest Leaflet No. 2 and must be carefully studied by the marking officer and complied. In addition the following broad guidelines are laid down for the marking Officer.

- (i) The Mother trees should be uniformly distributed all over the area and tall, well grown healthy trees with superior poles and well developed crown should be selected as mother trees. These should preferably of class II B and II-A.
- (ii) As far as practicable, mother trees selected should be of Fir and Spruce and uniformly spaced. In case of pure Fir crop, 40 to 50 trees per hac. and in case of pure Spruce 30 to 35 trees per hac. shall be retained as seed bearers. In the groups of Deodar and Kail occurring on warmer slopes and in lower belt, opening shall be created to same extent suitable for these species.
- (iii) In case of mixture of Fir and Spruce, 30 to 40 trees of both Fir and Spruce of 40 to 60 cms dia class per hac. shall be retained.
- (iv) As far as possible seed bearers shall be retained on ridges and spurs in order to have better disposal of seed.
- (v) Well grown advance growth up to 30 cm d.b.h. covering an area not less than 0.1 hac. and density exceeding 0.5 shall be retained as part of future crop.
- (vi) Markings on steep and precipitous slopes shall conform to selection principles.
- (vii) Broad leaved trees found in mixture with Fir and spruce shall ordinarily be retained but where too dense, they shall be marked or lopped as warranted by the situation in order to remove the over head shade and to create a proper seed bed.
- (viii) Before undertaking any forest for seeding fellings it shall be ensued that nursery stock is ready to replace the felled trees immediately after the timber has been extracted from the forest. To achieve this objective, nurseries should be raised 2 to 3 years in advances in the vicinity of the area to be undertaken for felling. In case neither the nurseries have been raised nor the stock is available, no markings/fellings shall be done and the yield for that particular year should be considered as obtained.
- (ix) Regeneration survey shall be carried out in the felled areas and the success of regeneration will be reviewed every fifth year. In case the regeneration is not keeping pace with the fellings further fellings shall be stopped/deferred.
- (x) Final felling shall be carried out keeping in view the progress of regeneration.

3.19.2 In PB-II Areas: This being sacred PB, no major felling of any kind and magnitude will be done in PB-II. However, only salvage marking of dead, uprooted trees will be done to clear these

forests from fire hazards and improvement of the crop. The yield removed from these PBs shall be counted for yields towards the yield of the Working Circles.

3.19.3 In PB-III Areas: No fellings will be carried out in this PB. However, salvage marking of dead and uprooted trees will be done to clear the forest from fire hazards. All removals shall count towards total yield of Working Circle.

3.19.4 Thinning: Thinning will be carried out in accordance with the principles of thinning laid down in Punjab Forest Leaflets No. I and IA, with the additional numerical check of yield table figures.

3.19.5 In PB-IV Areas: All over wood shall be removed in the areas where regeneration has been fully established. Besides this, thinnings in patches of advance growth are to be done. The following general principles are laid down for the guidance of marking officer:-

- (i) No attempt should be made to obtain or induce regeneration. The marking should aim at freeing the established regeneration by removing the over wood. Thus, first and second class trees standing over the established regeneration will be marked.
- (ii) All solitary trees standing amongst young crop which are likely to develop into wolf tree shall be marked.
- (iii) Thinnings in groups of poles and patches of advance growth shall be carried out wherever necessary.
- (iv) All marked trees likely to damage young crop underneath should be lopped before felling.
- (v) Broad leaved tree should not be marked unnecessarily on the pretext of improvement fellings.

3.20 Table of felling:

The following tabular statement gives the order of fellings in PB-I & IV areas:-

Table No. 3.27

PB-I

Year	Range	Name of Forest	Comptt. No.	Area in Hac.	Allotment	Nature of felling
1	2	3	4	6	7	8
2020-21	Arsu	-	-	-	-	-
	Chowai	-	-	-	-	-
	Nither	-	-	-	-	-
2021-22	Arsu	-	-	-	-	-
	Chowai	Kut	1/11 C-Ib	14.57	PB-I	Seeding Felling
	Nither	-	-	-	-	-
2022-23	Arsu	KANDUSHILLA	1/5 C-Ib	8.9	PB-I	Seeding Felling
		DUGASHIL	2/31 C-I	45.73	PB-I	Seeding Felling
	Nither	-	-	-	-	-
2023-24	Arsu	-	-	-	-	-

	Chowai	SATABANDRI TRIJHAKAR	1/13 C-VIIa	50.00 (Part)	PB-I	Seeding Felling
		OLINAL	1/23 C-I	21.45	PB-I	Seeding Felling
	Nither					Seeding Felling
2024-25	Arsu	-	-	-	-	-
	Chowai	SATABANDRI TRIJHAKAR	1/13 C-VIIa	50.00 (Part)	PB-I	Seeding Felling
	Nither					Seeding Felling
2025-26	Arsu	-	-	-	-	-
	Chowai	SATABANDRI TRIJHAKAR	1/13 C-VIIa	34.36 (Part)	PB-I	Seeding Felling
	Nither	DAMAN	2/20 C-I	50.00 (Part)	PB-I	Seeding Felling
2026-27	Arsu	-	-	-	-	-
	Chowai	JHAKARU	1/31 C-I	43.71	PB-I	Seeding Felling
	Nither	DAMAN	2/20 C-I	51.17 (Part)	PB-I	Seeding Felling
2027-28	Arsu	-	-	-	-	-
	Chowai	THACHSHILL	1/34 C-I	38.04	PB-I	Seeding Felling
		ALATU	2/29 C-I	14.97	PB-I	Seeding Felling
	Nither	-	-	-	-	-
2028-29	Arsu	-	-	-	-	-
	Chowai	SAKIRN	2/30 C-I	45.37 (Part)	PB-I	Seeding Felling
	Chowai					Seeding Felling
	Nither	-	-	-	-	-
2029-30	Arsu	-	-	-	-	-
	Chowai	SAKIRN	2/30 C-I	38(Part)	PB-I	Seeding Felling
						Seeding Felling
	Nither	-	-	-	-	-

PB-IV

Year	Range	Name of Forest	Comptt. No.	Area in Hac.	Allotment	Nature of felling
1	2	3	4	6	7	8
2020-21	Arsu	-	-	-	-	-
	Chowai	-	-	-	-	-
	Nither	-	-	-	-	-
2021-22	Arsu	-	-	-	-	-
	Chowai	-	-	-	-	-
	Nither	-	-	-	-	-
2022-23	Arsu	-	-	-	-	-
	Chowai	-	-	-	-	-
	Nither	-	-	-	-	-
2023-24	Arsu	MANDROW	2/19 C-I	50.00 (Part)	PB-IV	Final Felling
	Chowai	-	-	-	-	-
	Nither	-	-	-	-	-
2024-25	Arsu	MANDROW	2/19 C-I	49.96(Part)	PB-IV	Final Felling
	Chowai	-	-	-	-	-
	Nither	-	-	-	-	-
2025-26	Arsu	-	-	-	-	-
	Chowai	1/29 CHAJALA	C-I	48.56	PB-IV	Final Felling
	Nither	-	-	-	-	-
2026-27	Arsu	-	-	-	-	-
	Chowai	-	-	-	-	-
	Nither	-	-	-	-	-
2027-28	Arsu	-	-	-	-	-
		-	-	-	-	-
	Chowai	-	-	-	-	-
	Nither	-	-	-	-	-
2028-29	Arsu	-	-	-	-	-
	Chowai	-	-	-	-	-
	Chowai	-	-	-	-	-
	Nither	-	-	-	-	-
2029-30	Arsu	-	-	-	-	-
		-	-	-	-	-
	Chowai	-	-	-	-	-
	Nither	-	-	-	-	-

3.21 Subsidiary Silvicultural Operations, Cleaning and Thinning:

Following subsidiary silvicultural operations are prescribed:-

3.21.1 Subsidiary Silvicultural Operations in PB-I: The techniques of slash disposal are laid down in the technical order No.6 of Punjab Forest Manual Volume III. In addition to this the following principles must be born in mind while carrying out the slash disposal.

- (a) Once the seeding fellings are completed, collection and disposal of felling refuse, cutting of bushes and racking of humus etc. are the most essential operations to be carried out in order to obtain the clean seed bed.
- (b) As the felling refuse is salable as fuel wood or as pulp wood and the obsolete method of burning the same should be avoided. Very rarely and in exceptional circumstances, the felling refuse should be disposed by burning in small heaps in depressions and nalas. Every care should be taken while disposing the debris by burning, as Spruce and Fir trees are extremely susceptible to fire and die with excessive drought. Therefore, these heaps should be small and away from trees. As the heaps burn away, additional chips, twigs and billets can be added gradually keeping thereby intensity of fire low.
- (c) The humus around the burning heaps must be completely removed to ensure that the fire does not become underground. The humus in these patches will automatically get burnt and elsewhere it can be removed by scraping either in strips or patches to keep down the expenditure.
- (d) These operations shall be carried out in winter only and in the presence of Range Officer to avoid accidental fires.

3.21.2 Artificial regeneration: The natural regeneration in the Fir Spruce area has unfortunately been failed to fill the areas for many reasons and the reliance has to be placed on artificial regeneration. The technique of raising nurseries and artificial reproduction has been given in detail in the Chief Conservator of Forests Technical Order No. 3 &4 of Punjab Forest Manual Volume III and also Himachal Pradesh Forest Manual Volume IV.

Although both Silver Fir and Spruce constitute the forest but both these species are silviculturally different. Silver Fir is a very slow growing species and natural distribution of Spruce and Fir clearly indicates that Spruce grows in lower parts and silver Fir occupies upper belt. Silver Fir prefers the cooler, moist and shady locations whereas Spruce occupies the raised ground and exposed spur. The depressions are filled up by broad leaved species. Therefore, only such locations should be chosen for planting of Silver Fir as are suitable for the species. Some retrogression does take place as consequence of operation proceeding artificially and often it will be possible to introduce the faster grown and higher crowned Spruce in preference to Silver Fir. The Fir and Spruce seeds ripen in September, October and the seed should be collected from the middle aged healthy trees with well developed crown and clear bole. The Fir nursery should be raised in the natural zone of its distribution. The healthy plants not less than 25 to 30 cms. (Silver Fir 3.5 to 4.5 years old and Spruce 2.5 to 3.5 years old) in height (only polythene raised) should be planted in the field. The planting should be carried out in July after 2 to 3 good showers and must be planned in such a manner so as to complete by the end of first week of August. In moist location, Broad leaved species like Ash, Walnut, Bird cherry and Maple shall be planted in winter (December) when the plants are dormant.

3.21.3 Planting programme: The yield prescribed from the forest area in this Working Circle is directly proportionate to area planted successfully. Any slackness in plantation is going to reduce

the forest area for obtaining the prescribed yield. To achieve this objective detail planting programme has been given in the plantation (overlapping) Working Circle.

3.21.4 Closure and fencing: All the regeneration areas shall be fenced and closed for grazing. Action to notify these closures shall be taken immediately to avoid legal complications. Regeneration/successful planting depend upon the effective closure and good will of the local people and their cooperation in this regard.

3.21.5 Weeding: For the healthy growth of the plants timely weeding are of immense importance. The growing season of Fir is limited to the months of April, May and June and the plants must be kept free of weeds during this period. The growth starts with the onset of rain as the temperature falls down but still another weeding during July/August to keep the plant free of weed is essential and also beneficial. In a nut shell, the plants must always be kept free from weeds during the growing season. The weeding shall be continuing till the plants are free from the damage of the weeds.

3.22 Other Regulations:

3.22.1 Fire Protection: The whole Working Circle will be under strict vigil against fire hazard. Preventive measure should be taken in advance. Incendiary forest fires are very common and as such the forests are required to be strictly protected from these. The forests floor should be kept clean of inflammable material such as debris, unwanted bushes, weeds, needles and grass. The fire lines, inspection paths and bridle paths should be kept clean of needles especially during summer season. Fire watcher should be employed during dry months. Besides developing cordial relations with local people to protect the forests, they should be educated with regard to importance of forest conservation, rights and duties and social obligation as enshrined in Article 51 A(g) of the constitution of India read with Section 79 of the Indian Forest Act, 1927. The detail description is given in Chapter No. IX Forest Protection (Overlapping) Working Circle.

3.22.2 Grazing and grass cutting: Outside the regeneration areas, there will be no restriction on grass cutting. In all the PB-I areas under regeneration, grass cutting will not be allowed till the plants are at least 1 meter in height. Grass cutting in closed areas shall be allowed under the supervision of forest guard that no young, seedlings/sapling is cut. Grazing shall be strictly prohibited in the regeneration areas during the closure period under Section 30 (b) of Indian Forest Act, 1927.

3.22.3 Right Holder's Demand: Demand of right holder for timber will be met from the forest in which such rights has been recorded in Forest Settlement Report and as per revised timber distribution policy 2016 (**Notification No. FFE-B-A (3) 4/2015 Dated: Shimla -2, the 26 February, 2016**) and right and concessions shall be exercised strictly in accordance with the silviculture principles. Thus all rights can be exercised subject to silvicultural availability. No trees should be marked from PB-I area after the marking of seedling fellings have been done till the regeneration is fully established. Trees should be marked strictly in accordance with the silvicultural principles and not necessarily according to the convenience of right holders. No trees should be marked from the PB-I area. From other PBs, the trees to be marked to meet out the demand of right holder should be such as are required to be removed during the course of thinning and improvement fellings and final fellings. The trees can be removed / felled from forest irrespective of the prescribed year of fellings. All the trees marked to meet the demand of right holders shall count towards the prescribed yield. Dry and fallen trees should primarily be utilized to meet the right holders demand etc.

3.22.4 Closures: After the seedling fellings are over, the all PB-I areas should be closed immediately till the regeneration is established. The area will have to be closed for grazing till the

regeneration is established. Normally this period is 30 years, Govt. notification for such closure should be got issued under Section 30 (b) of Indian Forest Act, 1927 well in time after approval of felling programme by the competent authority to avoid any litigation.

3.22.5 Regeneration Survey: The regeneration survey of the felled areas shall be carried out every year as per standing instructions and corrective measures taken if the regeneration is not progressing satisfactorily. The regeneration survey of the felled PB-I areas shall be carried out to assess the progress of regeneration, and to plan operations for the next year. The reasons for failure should be detailed and corrective measures taken. The regeneration should be made to keep pace with the fellings and in case there are short falls on this account with reference to the prescription of the Working Plan, the further fellings should not be carried out and deferred till the problem is resolved.

CHAPTER - IV

THE CHIL WORKING CIRCLE

4.1 General Constitution:

This Working Circle includes all the Reserve, I Class Demarcated, II Class Demarcated and III Class (Undemarcated) protected forests which predominantly contain the pure chil or the one containing chil as 60% or more in composition, have been included in this Working Circle. In these forests natural regeneration is no problem and these forests can be economically exploited.

4.2 General Character of Vegetation:

The forests included in this Working Circle mainly conform the Champion and Seths type 9/c 1 (Himalayan Sub-tropical pine forests) and the general description of the crop has been described in Chapter II-A of Part I of the present Working Plan. The Chil generally occurs between 1000 meters to 2000 meters elevation. It gradually overlaps the tropical dry mixed deciduous forest at lower elevation and giving way to temperate forest above. It gradually merges into Dry-scrub Forests in Chowai and Nither Ranges and gives away to the temperate-broad leaved and conifer Forests above. The principal specie is *Pinus roxburghii* (Chil) which occurs in pure and gregarious form and constitutes stable sub climax due to biotic factors. It forms open, poor quality crops on the hot Southern aspect on rocky and shallow soil but on Northern aspect, there are few good patches of polls and middle aged crops of all kind of Forests. The crop is generally irregular and mature trees are few and widely scattered where pure quartzite formation occurs except in recently raised established Chil plantation where is the crop is even aged. Admixture of others species occurs along the upper limits as well as lower down in the streams and damp Nallas.

Kail and sprinkled deodar makes its appearance in the upper reaches and is sometimes extended into chil areas. Admixture of other species occurs along the upper limits as well as the lower streams and damp ravines. The common associates are *Quercus incana* (Ban oak), *Pyrus pashia* (Kainth), *Rhododendron arboretum* (Brass), *Lyonia ovalifolia* (Anyar) and occasional trees of *Cornus capitata* and *Albizzia procera*. The associates may occur either in light admixture or occasionally form an under storey in pine forests. *Pinus wallichiana* (Kail) makes its appearance in the upper most reaches and is sometimes found extending into Chil. Defective tapping of trees for extraction Resin and uprooting of trees by wind have caused vast destruction to the crop. The natural regeneration of Chil occurs purely in some areas.

4.3 Special objects of Management:

Without prejudice to general objects of managements, the special objects of managements of the forest allotted to this Working Circle are:

- (i) Gradual conversion of irregular stock to normal stock thus to build up growing stock to the extent possible under the prevailing conditions.
- (ii) To improve the existing soil covers for water and soil conservation.
- (iii) To restock the poorly stocked and blank areas through artificial means.
- (iv) To obtain the maximum possible yield of timber and resin on sustained basis.

(v) To tend the existing stand properly so as to progress generally in the direction of normal forest by obtaining normal growing stock, normal age class distribution and normal regeneration.

(vi) To protect the forests from fires as well as biotic interferences.

4.4 Area statement:

The total area of this Working Circle is **897.19 hac.** and works out to be 1.67 % of the total area of the division. The range wise distribution of these forests is given in table No. 4.1.

Table No.4.1

Chil Working Circle					
Name of Range	Area in Hac.				
	RFs	DPFs I Class	DPFs II Class	III Class Listed UPFs	Total
Arsu	0	287.73	145.28	0	433.01
Chowai	0	393.77	0	0	393.77
Nither	0	70.41	0	0	70.41
Total	0	751.91	145.28	0	897.19

The forest wise detail of specific allotment is given in **Appendix No.-I**

4.5 Block and Compartment:

No change in the existing compartments and sub compartments has been made. The compartments and sub compartments have been numbered systematically for RFs, I&II Class DPFs and III Class Forests (UPFs).

4.6 Felling Series:

One Felling series has been formed i.e. **Sutlej felling series**, conforming to the territorial jurisdiction of Anni forest Division.

4.7 Analysis and valuation of the crop:

Except for the converted crop during the period of previous plans (before the ban on green felling) the crop is irregular having all the age classes. The converted crop, however, is generally well stocked. The crop is even aged in the recently raised yield plantation. Admixture of other species also occurs. The common associates are *Quercus incana*, *Rhododendron* spp, *Pieris ovalifolia*, *Pyrus pashia*, *Bauhinia variagata*, *Albizia lebbek* etc. The associates occur either in light admixture or occasionally may form the under storey. The sprinkled Deodar and Kail also occurs in the upper reaches with Chil.

4.7.1 Stock Map:-The stock maps on 4"=1 Miles scale, have been prepared for all the forests separately and pasted in the concerned Compartment History file.

4.7.2 Density:-The crown density of each compartment has been estimated occularly and has been recorded in respective compartments history files. The average density of the crop varies from 0.2 to 0.5

4.7.3 Site quality: The site quality of the crop varies from place to place overall quality conform to II/III of the FRI quality classes. The site quality of individual compartments/ sub compartment has been indicated in the compartment history files.

4.7.4 Age Classes: -The crop is very irregular. There is predominance of young class. The overall age condition is as under:-

Table No. 4.2

	Young, 10-29 cms	Middle aged, 30- 59 cms	Mature & over Mature 60 & above cms.
Stems	133328	91020	12931
Volume in M3	11945.41	94478.44	51304.52

4.7.5 Enumerations: As given in the Chapter VIII under paragraph 8.7, sampled enumerations has been carried out. The enumeration was carried out on the grid system bases in the Sample IDs (Plots) of size 0.1 Ha each. Total 23 Nos. Sample plots pertaining to this working circle were enumerated. The detailed forest wise enumeration results are given in **Appendix No-VIII**. The results have been analyzed statistically and growing stock has been assessed / extrapolated.

Table No. 4.3

PB-I (Area in Ha. =91.86)														
Species wise No. and Volume in m3. (Estimated / Extrapolated growing stock) for Chil Working Circle														
Sr. No	Species Code	Species		10-20 V	20-30 IV	30-40 III	40-50 IIA	50-60 IIB	60-70 IA	70-80 IB	80-90 IC	90-100 ID	100 over IE	Total
1	241	Deodar	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
2	926	Kail	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
3	929	Chil	Number	27328	459	3445	4134	1608	1148	0	0	0	0	38122
			Volume in m3	1639.70	64.30	1446.80	5249.80	3874.20	4064.81	0.00	0.00	0.00	0.00	16339.60
4	2	Fir	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
5	921	Spruce	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
6	1162	Taxus	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
7	965	Bird cherry	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
8	19	Maple	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume	0	0	0	0	0	0	0	0	0	0	0

			in m3											
9	651	Walnut	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
10	38	Aescules	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
11	1010	Ban oak	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
12	1017	Kharshu Oak	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
13	1006	Mohru Oak	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
14	1038	Rhododendron	Number	230	919	689	0	0	0	0	0	0	0	1837
			Volume in m3	0.00	67.52	487.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	555.29
15	2000	Other B/L	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
		G.Total	Number	27558	1378	4134	4134	1608	1148	0	0	0	0	39959
			Volume in m3	1639.70	131.82	1934.57	5249.80	3874.20	4064.81	0.00	0.00	0.00	0.00	16894.89

Table No. 4.4

Species wise No. and Volume in cubic mts. (Estimated growing stock) for Chil Working Circle

Appendix -														
PB-II (Area in Ha. = 272.77)														
Species wise No. and Volume in m3. (Estimated / Extrapolated growing stock) for Chil Working Circle														
Sr. No	Species Code	Species		10-20 V	20-30 IV	30-40 III	40-50 IIA	50-60 IIB	60-70 IA	70-80 IB	80-90 IC	90-100 ID	100 over IE	Total
1	241	Deodar	Number	2182	546	1091	0	0	0	0	0	0	0	3819
			Volume in m3	130.93	76.38	458.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	665.56
2	926	Kail	Number	546	0	0	0	0	0	0	0	0	0	546
			Volume in m3	32.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	32.73
3	929	Chil	Number	17457	15821	18548	6001	3819	2728	2182	0	0	0	66556
			Volume in m3	1047.44	2214.89	7790.31	7621.19	9203.26	9656.06	10496.19	0.00	0.00	0.00	48029.34
4	2	Fir	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	921	Spruce	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	1162	Taxus	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	965	Bird cherry	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	19	Maple	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	651	Walnut	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	38	Aescules	Number	0	0	0	0	0	0	0	0	0	0	0

			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	1010	Ban oak	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	1017	Kharshu Oak	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	1006	Mohru Oak	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	1038	Rhododendron	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	2000	Other B/L	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		G.Total	Number	20185	16366	19639	6001	3819	2728	2182	0	0	0	70920
			Volume in m3	1211.10	2291.27	8248.56	7621.19	9203.26	9656.06	10496.19	0.00	0.00	0.00	48727.63

Table No. 4.5

PB-III (Area in Ha. = 147.71)														
Species wise No. and Volume in m3. (Estimated / Extrapolated growing stock) for Chil Working Circle														
Sr. No	Species Code	Species		10-20 V	20-30 IV	30-40 III	40-50 IIA	50-60 IIB	60-70 IA	70-80 IB	80-90 IC	90-100 ID	100 over IE	Total
1	241	Deodar	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	926	Kail	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	929	Chil	Number	15657	8567	5022	5022	591	295	295	295	0	0	35746
			Volume in m3	939.44	1199.41	2109.30	6378.12	1423.92	1045.79	1420.97	1799.11	0.00	0.00	16316.05
4	2	Fir	Number	0	0	0	0	0	0	0	0	0	0	0

			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	921	Spruce	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	1162	Taxus	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	965	Bird cherry	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	19	Maple	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	651	Walnut	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	38	Aescules	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	1010	Ban oak	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	1017	Kharshu Oak	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	1006	Mohru Oak	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	1038	Rhododendron	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	2000	Other B/L	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		G.Total	Number	15657	8567	5022	5022	591	295	295	295	0	0	35746
			Volume in m3	939.44	1199.41	2109.30	6378.12	1423.92	1045.79	1420.97	1799.11	0.00	0.00	16316.05

Table No. 4.6

PB-IV (Area in Ha. = 384.85)														
Species wise No. and Volume in m3. (Estimated / Extrapolated growing stock) for Chil Working Circle														
Sr. No	Species Code	Species		10-20 V	20-30 IV	30-40 III	40-50 IIA	50-60 IIB	60-70 IA	70-80 IB	80-90 IC	90-100 ID	100 over IE	Total
1	241	Deodar	Number	0	0	1283	0	0	0	0	0	0	0	1283
			Volume in m3	0	0	538.79	0	0	0	0	0	0	0	538.79
2	926	Kail	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
3	929	Chil	Number	19670	23946	14539	16677	8552	4704	1283	0	0	0	89371
			Volume in m4	1180.21	3352.47	6106.29	21179.58	20610.86	16651.18	6170.43	0.00	0.00	0.00	75251.00
4	2	Fir	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
5	921	Spruce	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m2	0	0	0	0	0	0	0	0	0	0	0
6	1162	Taxus	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m4	0	0	0	0	0	0	0	0	0	0	0
7	965	Bird cherry	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
8	19	Maple	Number	0	0	0	0	0	0	0	0	0	0	0

			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
9	651	Walnut	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m4	0	0	0	0	0	0	0	0	0	0	0
10	38	Aescules	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
11	1010	Ban oak	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
12	1017	Kharshu Oak	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
13	1006	Mohru Oak	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
14	1038	Rhododendron	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
15	2000	Other B/L	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
		G.Total	Number	19670	23946	15822	16677	8552	4704	1283	0	0	0	90654
			Volume in m3	1180.207	3352.471	6645.08	21179.578	20610.856	16651.1767	6170.4	0	0	0	75789.793

Table- 4.7

General Abstract Growing Stock in all PBs

All PBs(Area in Ha. = 897.19)														
Species wise No. and Volume in m3. (Estimated / Extrapolated growing stock) for Chil Working Circle														
Sr. No	Species Code	Species		10-20 V	20-30 IV	30-40 III	40-50 IIA	50-60 IIB	60-70 IA	70-80 IB	80-90 IC	90-100 ID	100 over IE	Total
1	241	Deodar	Number	2182	546	2374	0	0	0	0	0	0	0	5102
			Volume in m3	130.93	76.38	997.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1204.35
2	926	Kail	Number	546	0	0	0	0	0	0	0	0	0	546
			Volume in m3	32.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	32.73
3	929	Chil	Number	80113	48793	41554	31834	14569	8875	3760	295	0	0	229794
			Volume in m3	4806.78	6831.07	17452.69	40428.69	35112.24	31417.83	18087.59	1799.11	0.00	0.00	155935.99
4	2	Fir	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	921	Spruce	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	1162	Taxus	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	965	Bird cherry	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	19	Maple	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

9	651	Walnut	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	38	Aescules	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	1010	Ban oak	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	1017	Kharshu Oak	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	1006	Mohru Oak	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	1038	Rhododendron	Number	230	919	689	0	0	0	0	0	0	0	1837
			Volume in m3	0.00	67.52	487.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	555.29
15	2000	Other B/L	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		G.Total	Number	83070	50258	44617	31834	14569	8875	3760	295	0	0	237279
			Volume in m3	4970.44	6974.96	18937.51	40428.69	35112.24	31417.83	18087.59	1799.11	0.00	0.00	157728.36

4.7.6 Total growing stock per hac. Works out as under:-

Table No.- 4.8

P.B.	Area in hac.		No. & Vol. of conifers in cums	No. & Vol. of B.L. in cums	No. & Vol. / ha of conifers in cums	No. & Vol/ha of B.L. in cums	Total No. & vol / ha in cums
I	91.86	No.	38122	1837	166	8	174
		Vol.	16339.60	555.29	71.15	2.42	73.57
II	272.77	No.	70920	0	130	0	130
		Vol.	48727.63	0.00	89.32	0.00	89.32
III	147.71	No.	35746	0	121	0	121
		Vol.	16316.05	0.00	55.23	0.00	55.23
IV	384.85	No.	90654	0	212	0	212
		Vol.	75789.79	0.00	177.24	0.00	177.24
Total	897.19	No.	235441	1837	629	8	637
		Vol.	157173.07	555.29	392.94	2.418	395.36

4.8 Comparative Statement:

As discussed in the Para No. 4.7 above, sampled enumeration has been carried out on the grid system basis in the sample ID's (Plots) of the size 0.1 hac. each. The whole area of the Anni Forest Division was divided into grids and total 274 No's of sample were taken. Out of these 23No.s of sample plots pertaining to this working Circle were enumerated down to 10 cm dbh and analyzed. Thereafter, the growing stocks have been assessed/extrapolated as given in the table no. 4.3,4.4, 4.5 & 4.6 respectively.

The abstract showing the growing stock of PB-I, PB-II, PB-III , PB-IV & Total for this working circle in Negi's working plan and in the plan under revision is given and tabulated in table No. 4.9, 4.10, 4.11, 4.12 & 4.13 respectively :-

Table No. 4.9

PB –I (Area 91.86 hac)

Species wise No. & volume in cum. (Estimated/extrapolated growing stock) for Chil working Circle

Working Plan		No., Vol. in cum.	10-20'	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100 & above	Total No. & Vol.
Negi's Plan	Species		V	IV	III	IIA	IIB	IA	IB	IC	ID & above	
	Deodar	No.	247	76	31	46	54	34	16	9	7	520
		Vol.	43.966	36.936	32.085	83.904	154.17	140.3	90.208	66.51	65.688	713.767
	Kail	No.	200	34	7	12	14	11	1	0	0	279
		Vol.	30.4	14.382	6.748	21.3	39.97	46.26	5.824	0	0	164.884
	Chil	No.	34438	4896	1842	1339	1046	910	371	195	68	45105
		Vol.	3065	1605.9	1427.6	1979	2483.62	3448	2027.9	1468.55	701.28	18206.9
	Total No. Trees		34885	5006	1880	1397	1114	955	388	204	75	45904
	Total Vol.		3139.37	1657.22	1466.43	2084.2	2677.76	3634.56	2123.93	1535.06	766.968	19085.5

PB -I (Area 91.86 hac)

Species wise No. & volume in cum. (Estimated/extrapolated growing stock) for Chil working Circle

Working Plan		No., Vol. in cum.	10-20'	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100 & above	Total No. & Vol.
Current Plan	Species		V	IV	III	IIA	IIB	IA	IB	IC	ID	IE & above	
	Deodar	No.	0	0	0	0	0	0	0	0	0	0	0
		Vol.	0	0	0	0	0	0	0	0	0	0	0
	Kail	No.	0	0	0	0	0	0	0	0	0	0	0
		Vol.	0	0	0	0	0	0	0	0	0	0	0

	Chil	No.	27328	459	3445	4134	1608	1148	0	0	0	0	38121.9
		Vol.	1639.70	64.30	1446.80	5249.80	3874.20	4064.81	0.00	0.00	0.00	0.00	16339.598
	Fir	No.	0	0	0	0	0	0	0	0	0	0	0
		Vol.	0	0	0	0	0	0	0	0	0	0	0
	Spruce	No.	0	0	0	0	0	0	0	0	0	0	0
		Vol.	0	0	0	0	0	0	0	0	0	0	0
	Total No. Trees	No.	27328.35	459.30	3444.75	4133.70	1607.55	1148.25	0.00	0.00	0.00	0.00	38121.90
	Total Vol.	Vol.	1639.70	64.30	1446.80	5249.80	3874.20	4064.81	0.00	0.00	0.00	0.00	16339.60

Table No. 4.10

PB –II (Area 272.76 hac)

Species wise No. & volume in cum. (Estimated/extrapolated growing stock) for Chil working Circle

Working Plan		No., Vol. in cum.	10-20'	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100 & above	Total No. & Vol.
Negi's Plan	Species		V	IV	III	IIA	IIB	IA	IB	IC	ID & above	
	Deodar	No.	0	0	0	0	0	0	0	0	0	0
		Vol.	0	0	0	0	0	0	0	0	0	0
	Kail	No.	0	0	0	0	0	0	0	0	0	0
		Vol.	0	0	0	0	0	0	0	0	0	0
	Chil	No.	20653	2610	2201	1074	1276	877	575	342	153	29761
		Vol.	1838.117	856.08	1705.8	1909.6	3151.7	3322.953	3143	2575	1654.39	20156.6
	Total No. Trees		20653	2610	2201	1074	1276	877	575	342	153	29761
	Total Vol.		1838.12	856.08	1705.8	1909.6	3151.7	3322.95	3143	2575	1654.39	20156.6

PB -II (Area 272.77 hac)

Species wise No. & volume in cum. (Estimated/extrapolated growing stock) for Chil working Circle

Working Plan		No., Vol. in cum.	10-20'	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100 & above	Total No. & Vol.
	Species		V	IV	III	IIA	IIB	IA	IB	IC	ID	IE & above	
Current Plan	Deodar	No.	2182	546	1091	0	0	0	0	0	0	0	3818.78
		Vol.	130.93	76.38	458.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	665.5588
	Kail	No.	546	0	0	0	0	0	0	0	0	0	546
		Vol.	32.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	32.7324
	Chil	No.	17457	15821	18548	6001	3819	2728	2182	0	0	0	66555.88
		Vol.	1047.44	2214.89	7790.31	7621.19	9203.26	9656.06	10496.19	0.00	0.00	0.00	48029.342
	Fir	No.	0	0	0	0	0	0	0	0	0	0	0
		Vol.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
	Spruce	No.	0	0	0	0	0	0	0	0	0	0	0
		Vol.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
	Total No. Trees	No.	20184.98	16366.20	19639.44	6000.94	3818.78	2727.70	2182.16	0.00	0.00	0.00	70920.20
	Total Vol.	Vol.	1211.10	2291.27	8248.56	7621.19	9203.26	9656.06	10496.19	0.00	0.00	0.00	48727.63

Table No. 4.11

PB –III (Area 147.71 hac)

Species wise No. & volume in cum. (Estimated/extrapolated growing stock) for Chil working Circle

Working Plan		No., Vol. in cum.	10-20'	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100 & above	Total No. & Vol.
Negi's Plan	Species		V	IV	III	IIA	IIB	IA	IB	IC	ID & above	
	Deodar	No.	0	0	0	0	0	0	0	0	0	0
		Vol.	0	0	0	0	0	0	0	0	0	0
	Kail	No.	0	0	0	0	0	0	0	0	0	0
		Vol.	0	0	0	0	0	0	0	0	0	0
	Chil	No.	204	1202	1600	1182	619	270	99	45	26	5247
		Vol.	1746.99									7091.74
	Total No. Trees		204	1202	1600	1182	619	270	99	45	26	5247
	Total Vol.		18.156	394.256	1240	1747	1528.93	1023.03	541.134	338.895	260.338	7091.74

PB -III (Area 147.71 hac)

Species wise No. & volume in cum. (Estimated/extrapolated growing stock) for Chil working Circle

Working Plan		No., Vol. in cum.	10-20'	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100 & above	Total No. & Vol.
Current Plan	Species		V	IV	III	IIA	IIB	IA	IB	IC	ID	IE & above	
	Deodar	No.	0	0	0	0	0	0	0	0	0	0	0
		Vol.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
	Kail	No.	0	0	0	0	0	0	0	0	0	0	0

		Vol.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
	Chil	No.	15657	8567	5022	5022	591	295	295	295	0	0	35745.82
		Vol.	939.44	1199.41	2109.30	6378.12	1423.92	1045.79	1420.97	1799.11	0.00	0.00	16316.047
	Fir	No.	0	0	0	0	0	0	0	0	0	0	0
		Vol.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
	Spruce	No.	0	0	0	0	0	0	0	0	0	0	0
		Vol.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
	Total No. Trees	No.	15657.26	8567.18	5022.14	5022.14	590.84	295.42	295.42	295.42	0.00	0.00	35745.82
	Total Vol.	Vol.	939.44	1199.41	2109.30	6378.12	1423.92	1045.79	1420.97	1799.11	0.00	0.00	16316.05

Table No. 4.12

PB -IV(Area 384.85 hac)

Species wise No. & volume in cum. (Estimated/extrapolated growing stock) for Chil working Circle

Workin g Plan	Species	No., Vol. in cum.	10-20'	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100 & above	Total No. & Vol.
			V	IV	III	IIA	IIB	IA	IB	IC	ID & above	
Negi's Plan	Deodar	No.	648	636	136	15	3	2	0	0	0	1440
		Vol.	115.34	309.1	140.76	27.36	8.565	8.252	0	0	0	609.377
	Kail	No.	79	64	38	22	13	3	3	1	1	224
		Vol.	11.552	27.072	36.632	39.05	37.115	12.62	17.472	7.713	9.872	199.098
	Chil Spruce	No.	20389	8127	4208	2514	1281	725	314	110	23	37691
		Vol.	1814.6	2665.7	3261.2	3715.7	3164.07	2747	1716.3	828.41	248.7	20161.7
		No.	2	4	0	2	0	0	0	0	0	8
		Vol.	0.272	1.716	0	3.938	0	0	0	0	0	5.926

	Total No. Trees		21118	8831	4382	2553	1297	730	317	111	24	39363
	Total No. Vol.		1941.76	3003.59	3438.59	3786.05	3209.75	2767.87	1733.77	836.123	258.572	20976.1

PB -IV (Area 384.85 hac)

Species wise No. & volume in cum. (Estimated/extrapolated growing stock) for Chil working Circle

Workin g Plan		No., Vol. in cum.	10-20'	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100 & above	Total No. & Vol.
	Species		V	IV	III	IIA	IIB	IA	IB	IC	ID	IE & above	
Current Plan	Deodar	No.	0	0	1283	0	0	0	0	0	0	0	1282.8333
		Vol.	0	0	538.79	0	0	0	0	0	0	0	538.79
	Kail	No.	0	0	0	0	0	0	0	0	0	0	0
		Vol.	0	0	0	0	0	0	0	0	0	0	0
	Chil	No.	19670	23946	14539	16677	8552	4704	1283	0	0	0	89370.722
		Vol.	1180.21	3352.47	6106.29	21179.58	20610.86	16651.18	6170.43	0.00	0.00	0.00	75251.003
	Fir	No.	0	0	0	0	0	0	0	0	0	0	0
		Vol.	0	0	0	0	0	0	0	0	0	0	0
	Spruce	No.	0	0	0	0	0	0	0	0	0	0	0
		Vol.	0	0	0	0	0	0	0	0	0	0	0
	Total No. Trees	No.	19670.1 1	23946.22	15821.61	16676.8 3	8552.22	4703.72	1282.8 3	0.00	0.00	0.00	90653.56
	Total Vol.	Vol.	1180.21	3352.47	6645.08	21179.5 8	20610.8 6	16651.1 8	6170.4 3	0.00	0.00	0.00	75789.79

Table No. 4.13

All PB's Area 897.18 Hac)

Species wise No. & volume in cum. (Estimated/extrapolated growing stock) for Chil working Circle

Working Plan		No., Vol. in cum.	10-20'	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100 & above	Total No. & Vol.
Negi's Plan	Species		V	IV	III	IIA	IIB	IA	IB	IC	ID & above	
	Deodar	No.	895	712	167	61	57	36	16	9	7	1960
		Vol.	159.306	346.036	172.845	111.264	162.735	148.552	90.208	66.51	65.688	1323.14
	Kail	No.	279	98	45	34	27	14	4	1	1	503
		Vol.	41.952	41.454	43.38	60.35	77.085	58.88	23.296	7.713	9.872	363.982
	Chil Spruce	No.	75684	16835	9851	6109	4222	2782	1359	692	270	117804
		Vol.	6735.873	5521.936	7634.6	9351.296	10328.32	10540.98	7428.334	5210.855	2864.708	65616.91
		No.	2	4	0	2	0	0	0	0	0	8
		Vol.	0.272	1.716	0	3.938	0	0	0	0	0	5.926
	Total No. Trees		76860	17649	10063	6206	4306	2832	1379	702	278	120275
	Total Vol.		6937.4	5911.14	7850.83	9526.85	10568.1	10748.4	7541.84	5285.08	2940.27	67310

All PB (Area hac. 897.19 hac)

Species wise No. & volume in cum. (Estimated/extrapolated growing stock) for Chil working Circle

Working Plan		No., Vol. in cum.	10-20'	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100 & above	Total No. & Vol.
Current Plan	Species		V	IV	III	IIA	IIB	IA	IB	IC	ID	IE & above	
	Deodar	No.	2182	546	2374	0	0	0	0	0	0	0	5102

	Vol.	131	76	997	0	0	0	0	0	0	0	1204
Kail	No.	546	0	0	0	0	0	0	0	0	0	546
	Vol.	33	0	0	0	0	0	0	0	0	0	33
Chil	No.	80113	48793	41554	31834	14569	8875	3760	295	0	0	229794
	Vol.	4807	6831	17453	40429	35112	31418	18088	1799	0	0	155936
Fir	No.	0	0	0	0	0	0	0	0	0	0	0
	Vol.	0	0	0	0	0	0	0	0	0	0	0
Spruce	No.	0	0	0	0	0	0	0	0	0	0	0
	Vol.	0	0	0	0	0	0	0	0	0	0	0
Total No. Trees	No.	82840.70	49338.90	43927.94	31833.61	14569.39	8875.09	3760.41	295.42	0.00	0.00	235441
Total No. Vol.	Vol.	4970.44	6907.45	18449.74	40428.69	35112.24	31417.83	18087.59	1799.11	0.00	0.00	157173

4.9 Silvicultural System:

The forest allotted to this Working Circle shall be managed under the Punjab shelter Wood System with the provision of retention of compact group of well grown poles as a part of future crop. No felling will be done on steep, precipitous and rocky patches and the blanks will be regenerated through Afforestation with Chil. The marking will be done on selection principal along steep slopes, nallas and broken ground. Efforts will be made to regenerate the area naturally with effective closure. Artificial planting will only resorted where natural regeneration fails to come up in a reasonable time.

4.10 Choice of species:

Chil should be given preference in the natural zone but other species coming up naturally shall not be sacrificed for the craze of pure tree. Where Chil cannot be established easily, the species best suited to the locality shall be favoured.

4.11 Regeneration period:

Regeneration period is fixed at 30 years. Besides regenerating P.B.I areas, all the blank areas included in the P.B.IV shall be regenerated artificially depending upon availability of funds. Efforts will be made to regenerate the area naturally supplemented with artificial planting.

4.12 Rotation period:

The rotation is fixed at 120 years in this Working Circle. This period of 120 years is reasonable and economical for resin tapping and production of sizes of timber fit for all market demands. The general quality class of the tract is II/III FRI.

4.13 Exploitable diameter:

Exploitable diameter fixed is 60 cm dbh being the most suited to yield better out turn in the form of sleeper size which fetches better price in the market. This is, however, a size to be aimed at, for the converted crop whereas the existing crop has such a large preponderance over mature stock that the exploitable size is only of academic interest.

4.14 Felling cycle:

The felling cycle of 30 years corresponding to the regeneration period of the plan will be adopted, keeping in view the silviculture requirements

4.15 Division into periodic blocks:

With the rotation of 120 years and regeneration period of 30 years, the area of the whole Working Circle has been divided into 4 periodic Blocks as P.B.I, P.B.II, P.B.III, PB-IV. As the crop is generally of younger age classes with very few middle aged mature trees, so PBs cannot be divided on text book pattern. Yet every attempt is made to allot areas as to fit in PBs depending on dia classes available. The allotment is discussed as under:-

4.15.1 PB-I : It includes the un-felled areas of expired plan and other most suitable as far as the maturity of crop is concerned and those areas that remained under stock and where regeneration is either still progressing or has not come at all. The forests with generally blanks & having majority of mature trees are allotted to this PB. No fellings were generally done in the plan under revision in PB-I. Some closures for artificial regeneration were, however done in PB-I areas. All such areas have been put in PB-I. No change is made in PB-I area of the plan under revision. The distribution of number of trees and volume per hac. is given in table No. 4.14.

Table No.-4.14

Species wise distribution of number of trees and volume per hac.

Circle P.B.-I Area= 91.86 Hac.												
Species		10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100 over	Total
		V	IV	III	IIA	IIB	IA	IB	IC	ID	IE	
Deodar	Trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	Vol per hac.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0

Kail	Trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	Vol per hac.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
Chil	Trees per hac.	119	2	15	18	7	5	0	0	0	0	166
	Vol per hac.	7.14	0.28	6.30	22.86	16.87	17.70	0.00	0.00	0.00	0.00	71.15
Fir	Trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	Vol per hac.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
Spruce	Trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	Vol per hac.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
Taxus	Trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	Vol per hac.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
Bird cherry	Trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	Vol per hac.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
Maple	Trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	Vol per hac.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
Walnut	Trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	Vol per hac.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
Aescules	Trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	Vol per hac.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
Ban oak	Trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	Vol per hac.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
Kharshu Oak	Trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	Vol per hac.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
Mohru Oak	Trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	Vol per hac.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
Rhododendron	Trees per hac.	1	4	3	0	0	0	0	0	0	0	8
	Vol per hac.	0.00	0.29	2.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.42
Other B/L	Trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	Vol per hac.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
G.Total	Trees per hac.	120	6	18	18	7	5	0	0	0	0	174
	Vol per hac.	7.14	0.57	8.42	22.86	16.87	17.70	0.00	0.00	0.00	0.00	73.57

4.15.2 PB-II

Forests, in which there is preponderance of maturing trees, have been allotted to this periodic block. No change is made in PB-II areas of the plan under revision. The distribution of number of trees and volume per hac. is given in table No. 4.15.

Table No.4.15

Species wise distribution of number of trees and volume per hac.

Circle P.B.-II Area= 272.77 Hac.												
Species		10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100 over	Total
		V	IV	III	IIA	IIB	IA	IB	IC	ID	IE	
Deodar	Trees per hac.	4	1	2	0	0	0	0	0	0	0	7
	Vol per hac.	0.24	0.14	0.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.22
Kail	Trees per hac.	1	0	0	0	0	0	0	0	0	0	1
	Vol per hac.	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06
Chil	Trees per hac.	32	29	34	11	7	5	4	0	0	0	122
	Vol per hac.	1.92	4.06	14.28	13.97	16.87	17.70	19.24	0.00	0.00	0.00	88.04
Fir	Trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	Vol per hac.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
Spruce	Trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	Vol per hac.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
Taxus	Trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	Vol per hac.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
Bird cherry	Trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	Vol per hac.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
Maple	Trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	Vol per hac.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
Walnut	Trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	Vol per hac.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
Aescules	Trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	Vol per hac.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
Ban oak	Trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	Vol per hac.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
Kharshu Oak	Trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	Vol per hac.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
Mohru Oak	Trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	Vol per hac.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
Rhododendron	Trees per hac.	0	0	0	0	0	0	0	0	0	0	0

	Vol per hac.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other B/L	Trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	Vol per hac.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
G.Total	Trees per hac.	37	30	36	11	7	5	4	0	0	0	130
	Vol per hac.	2.22	4.20	15.12	13.97	16.87	17.70	19.24	0.00	0.00	0.00	89.32

4.15.3 PB-III: The forests carrying pole to middle aged crops with few scattered matured and maturing trees has been allotted to this PB, as in plan under revision. No change has been made therein. The distribution of number of trees and volume per hac. is given in table No. 4.16.

Table No.4.16

Species wise distribution of number of trees and volume per hac.

Circle P.B.-III Area= 147.71 Hac.												
Species		10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100 over	Total
		V	IV	III	IIA	IIB	IA	IB	IC	ID	IE	
Deodar	Trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	Vol per hac.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
Kail	Trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	Vol per hac.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
Chil	Trees per hac.	53	29	17	17	2	1	1	1	0	0	121
	Vol per hac.	3.18	4.06	7.14	21.59	4.82	3.54	4.81	6.09	0.00	0.00	55.23
Fir	Trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	Vol per hac.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
Spruce	Trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	Vol per hac.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
Taxus	Trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	Vol per hac.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
Bird cherry	Trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	Vol per hac.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
Maple	Trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	Vol per hac.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
Walnut	Trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	Vol per hac.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
Aescules	Trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	Vol per hac.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
Ban oak	Trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	Vol per hac.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0

Kharshu Oak	Trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	Vol per hac.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
Mohru Oak	Trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	Vol per hac.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
Rhododendron	Trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	Vol per hac.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other B/L	Trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	Vol per hac.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
G.Total	Trees per hac.	53	29	17	17	2	1	1	1	0	0	121
	Vol per hac.	3.18	4.06	7.14	21.59	4.82	3.54	4.81	6.09	0.00	0.00	55.23

4.15.4 PB-IV: All the compartment having young poles with scattered mother trees have been allotted to PB-IV as in the plan under revision. No change has been made therein. The species wise distribution in different classes is given in table No. 4.17.

Table No.4.17

Species wise distribution of number of trees and volume per hac.

Circle P.B.-IV Area=384.85 Hac.												
Species		10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100 over	Total
		V	IV	III	IIA	IIB	IA	IB	IC	ID	IE	
Deodar	Trees per hac.	0	0	3	0	0	0	0	0	0	0	3
	Vol per hac.	0.00	0.00	1.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.26
Kail	Trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	Vol per hac.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
Chil	Trees per hac.	46	56	34	39	20	11	3	0	0	0	209
	Vol per hac.	2.76	7.84	14.28	49.53	48.20	38.94	14.43	0.00	0.00	0.00	175.98
Fir	Trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	Vol per hac.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
Spruce	Trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	Vol per hac.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
Taxus	Trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	Vol per hac.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
Bird cherry	Trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	Vol per hac.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
Maple	Trees per hac.	0	0	0	0	0	0	0	0	0	0	0

	Vol per hac.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
Walnut	Trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	Vol per hac.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
Aescules	Trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	Vol per hac.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
Ban oak	Trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	Vol per hac.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
Kharshu Oak	Trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	Vol per hac.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
Mohru Oak	Trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	Vol per hac.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
Rhododendron	Trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	Vol per hac.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other B/L	Trees per hac.	0	0	0	0	0	0	0	0	0	0	0
	Vol per hac.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
G.Total	Trees per hac.	46	56	37	39	20	11	3	0	0	0	212
	Vol per hac.	2.76	7.84	15.54	49.53	48.20	38.94	14.43	0.00	0.00	0.00	177.24

4.15.5 General abstract of areas allotted PB wise

The PB wise allotment of the areas to different Ranges is given in the table No. 4.18

Table No.4.18

Name of Range	Forest Category	CHIL WORKING CIRCLE				
Arsu		PB1	PBII	PBIII	PBIV	TOTAL
	RFs	0	0	0	0	0
	I Class DPFs	0	0	0	287.73	287.73
	II Class DPFs	0	0	106.84	38.44	145.28
	III Class Listed UPFs	0	0	0	0	0
	Total	0	0	106.84	326.17	433.01
Chowai	RFs	0	0	0	0	0
	I Class DPFs	91.86	272.77	0	29.14	393.77
	II Class DPFs	0	0	0	0	0
	III Class Listed UPFs	0	0	0	0	0
	Total	91.86	272.77	0	29.14	393.77
Nither	RFs	0	0	0	0	0
	I Class DPFs	0	0	40.87	29.54	70.41
	II Class DPFs	0	0	0	0	0
	III Class Listed UPFs	0	0	0	0	0
	Total	0	0	40.87	29.54	70.41

	G.Total	91.86	272.77	147.71	384.85	897.19

4.16 Calculation of yield:

The yield has been calculated by volume for PB-I and PB-IV. Increment has been ignored for the reasons safety against fire and natural calamities and to serve as emergency reserve. No yield has been prescribed from PB-II as a safe guard and to build up the growing stock to be treated in next PB-I.

4.16.1 Yield from PB-I areas: The enumeration down to 10 cms dbh in 10 cms dia classes has been carried out in Four numbers sample plots of size 0.1 Ha each forest of PB-I areas. The abstract of sample taken in PB-I areas are tabulated in table No.:- 4.19

Table No.- 4.19

Sr. No.	Name of Range	Sample Taken
1.	Arsu	0
2.	Chowai	4
3.	Nither	0
	Total	4

The abstract showing the growing stock of class wise and species wise in PB-I areas is tabulated in at table No. 4.20 & the details are given in the **Appendix No.-XII**

Table No.- 4.20

PB-I (Area in Ha. =91.86)														
Species wise No. and Volume in m3. (Estimated / Extrapolated growing stock) for Chil Working Circle														
Sr. No	Species Code	Species		10-20 V	20-30 IV	30-40 III	40-50 IIA	50-60 IIB	60-70 IA	70-80 IB	80-90 IC	90-100 ID	100 over IE	Total
1	241	Deodar	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
2	926	Kail	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
3	929	Chil	Number	27328	459	3445	4134	1608	1148	0	0	0	0	38122
			Volume in m3	1639.70	64.30	1446.80	5249.80	3874.20	4064.81	0.00	0.00	0.00	0.00	16339.60
4	2	Fir	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
5	921	Spruce	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
6	1162	Taxus	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
7	965	Bird cherry	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
8	19	Maple	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
9	651	Walnut	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0

10	38	Aescules	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
11	1010	Ban oak	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
12	1017	Kharshu Oak	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
13	1006	Mohru Oak	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
14	1038	Rhododendron	Number	230	919	689	0	0	0	0	0	0	0	1837
			Volume in m3	0.00	67.52	487.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	555.29
15	2000	Other B/L	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0	0	0	0	0	0	0	0	0	0	0
		G.Total	Number	27558	1378	4134	4134	1608	1148	0	0	0	0	39959
			Volume in m3	1639.70	131.82	1934.57	5249.80	3874.20	4064.81	0.00	0.00	0.00	0.00	16894.89

4.16.1.1 Yield calculation: Theoretically, the entire growing stock except that of mother trees above 40cms in dia should be available during the plan period and since the compact group of poles shall be retained as advance growth and some trees will also be left on broken ground, only part of II and III/IV class trees will be further restricted as some trees shall have to retain as emergency reserve and as fire insurance trees. The trees standing on blanks or over patches where regeneration has not established shall also be not available. Therefore, the yield on the basis of silvicultural availability is calculated as under:-

Table No. 4.21

Species	C1	C2	C3
Deodar	0.4	0.3	0.3
Kail	0.7	0.6	0.5
Chil	0.7	0.6	0.6

The above proportion is based on purely theoretical consideration.

The yield is now calculated by Hufnagels formula as under:-

$$Y = \frac{C1V1+C2V2+C3V3}{P}$$

(Deodar) C1= Constant representing the fraction of volume of I class trees available for felling during the regeneration period. C1 has been taken as 0.4.

C2= Constant representing the fraction of volume of II class trees available for felling during period. C2 has been taken as 0.3.

C3= Constant representing the fraction of volume of IV and III class trees available for felling during period. C2 has been taken as 0.3.

(Deodar) V1= Volume of trees of I class trees of conifers = 0M³

V2= Volume of trees of II class trees of conifers =0M³

V3= Volume of trees of IV and III class trees of conifers = 0M³

P= Period of the plan is 10 year i.e. Working Plan period.

$$\text{Yield} = \frac{C1V1+C2V2+C3V3}{P}$$

$$0.4 \times 0 + 0.3 \times 0 + 0.3 \times 0$$

$$Y = \frac{\text{-----}}{10} = 0 \text{ M}^3$$

(Kail) C1= Constant representing the fraction of volume of I class trees available for felling during the regeneration period. C1 has been taken as 0.7.

C2= Constant representing the fraction of volume of II class trees available for felling during period. C2 has been taken as 0.6.

C3= Constant representing the fraction of volume of IV and III class trees available for felling during period. C2 has been taken as 0.5.

(Kail) V1= Volume of trees of I class trees of conifers = 0 M3

V2= Volume of trees of II class trees of conifers = 0 M3

V3= Volume of trees of IV and III class trees of conifers = 0 M3

P= Period of the plan is 10 year i.e. Working Plan period.

$$\text{Yield} = \frac{C1V1+C2V2+C3V3}{P}$$

$$Y = \frac{0.7 \times 0 + 0.6 \times 0 + 0.5 \times 0}{10} = 0 \text{ M}^3$$

(Chil) Where V1, V2 and V3 are the volumes of I class, II class trees and III and IV class respectively.

P=Plan period i.e. 10 years.

C1, C2, C3 are the constants representing percentage of I class, II class and III class and IV class trees respectively estimated to be available for felling during the regeneration period. The values of constants of C1, C2, C3 have been fixed as under after detailed examination of forests during field inspections.

C1= Constant representing the fraction of volume of I class trees available for felling during the regeneration period. C1 has been taken as 0.7

C2= Constant representing the fraction of volume of IIA & IIB class trees available for felling during period. C2 has been taken as 0.6

C3= Constant representing the fraction of volume of III & IV class trees available for felling during period. C3 has been taken as 0.6.

V1= Volume of trees of I class trees of Chil.

V2= Volume of trees of II class trees of Chil.

V3= Volume of trees of III & IV class trees of Chil.

P= Plan period which is 10 years.

$$0.7 \times 4064.81 + 0.6 \times 9123.99 + 0.6 \times 1511.10$$

$$(\text{CHIL}) Y = \frac{\text{-----}}{10} = 922.65 \text{ or say } 922 \text{ M}^3$$

Therefore, the annual yield of different species is summarized as under for P.B-I -

Table No. 4.22

Sr. No.	Species	Annual yield (in M3)
1	Deodar	0
2	Kail	0
3	Fir	0
4	Spruce	0
5	Chil	922
	Total	922

4.16.1.2 Yield from PB-II: Fellings in this block shall be confined to removal of dead and uprooted trees only. In order to safe guard the future yield, no major fellings are prescribed and

therefore, no yield has been calculated for this periodic block. The enumeration down to 10 cms dbh in 10 cms dia classes has been carried out in Five numbers sample plots of size 0.1 Ha each forest of PB-II areas. The abstract of sample taken in PB-II areas are tabulated in table No.: 4.23

Table No. 4.23

Sr. No.	Name of Range	Sample Taken
1.	Arsu	0
2.	Chowai	5
3.	Nither	0
	Total	5

The abstract showing the growing stock of class wise and species wise in PB-II areas & the details are given in the **Appendix No.-XII**

4.16.1.3 Intermediate yield from PB-III: The forests of this block with exception of Chil plantations raised artificial are quite open. In this periodic block, no yield is prescribed. However, removals of fallen uprooted and snow damaged trees is to be carried out periodically. The demand of right holders used to be invariably met from the forests of this periodic block before imposition of ban on green fellings and recently the ban on grant of TD to the right holders has been lifted and only dry and fallen trees are now being given to the right holders. There will be no volume control of yield from thinning since there is hardly any scope of thinning except in Chil plantations. Hence no green fellings are prescribed. All the removals of any sort, will, however, be counted toward the yield of PB-I.

As given in the Chapter-VIII under paragraph 8.8 sampled enumeration of the samples size 0.1 ha, down to 10 cms dbh in 10 cms dia classes has been carried out in 5 numbers of PB-III areas and the details are given in the **Appendix No.-VIII**

The detail of enumeration done in the sample areas is given in **Appendix No-VIII**

4.16.1.4 Yield from PB-IV Area. The enumeration of this working circle has been carried out in 9 Nos. sample plots of size 0.1 Ha, down to 10 cms dbh in 10 cms dia classes and the details are given in the **Appendix No VIII**. The Per Hectare Stems and Volume was then extrapolated to PB-IV area (**384.85**) to calculate the yield just for academic interest. The calculation of yield has based on the total volume of trees in PB-IV.

The results of enumeration samples taken Range wise is tabulated in table No. 4.24

Table No. – 4.24

Sr. No.	Name of Range	Sample Taken
1	Arsu	6
2	Chowai	2
3.	Nither	1
	Total	9

The abstract of growing stock is tabulated in the table No 4.25

Table No. 4.25

PB-IV (Area in Ha. = 384.85)

Species wise No. and Volume in m3. (Estimated / Extrapolated growing stock) for Chil Working Circle

Sr. No	Species Code	Species		10-20 V	20-30 IV	30-40 III	40-50 IIA	50-60 IIB	60-70 IA	70-80 IB	80-90 IC	90-100 ID	100 over IE	Total
1	241	Deodar	Number	0	0	1283	0	0	0	0	0	0	0	1283
			Volume in m3	0.00	0.00	538.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	538.79
2	926	Kail	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	929	Chil	Number	19670	23946	14539	16677	8552	4704	1283	0	0	0	89371
			Volume in m3	1180.21	3352.47	6106.29	21179.58	20610.86	16651.18	6170.43	0.00	0.00	0.00	75251.00
4	2	Fir	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	921	Spruce	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	1162	Taxus	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	965	Bird cherry	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	19	Maple	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	651	Walnut	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	38	Aescules	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	1010	Ban oak	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	1017	Kharshu Oak	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	1006	Mohru Oak	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	1038	Rhododen dron	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	2000	Other B/L	Number	0	0	0	0	0	0	0	0	0	0	0
			Volume in m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		G.Total	Number	19670	23946	15822	16677	8552	4704	1283	0	0	0	90654
			Volume in m3	1180.21	3352.47	6645.08	21179.58	20610.86	16651.18	6170.43	0.00	0.00	0.00	75789.79

The calculation of yield has based on the total volume of trees in PB-IV. Increment has not been taken into account. All I and II class trees do not warrant their retention in this periodic block and as such can be removed during the plan period. Silviculturally, it is not possible to remove all such trees. Trees standing on precipitous and broken ground have to be retained. Besides this some I and II class trees will have to be kept as fire insurance and national emergency reserves. Similarly the II class trees standing amongst the patches of advance growth will not always be available for fellings. This being so, it has been estimated that only 75% of the volume of I and II class trees

can be removed during the Working Plan period. In addition to this another 10% volume of trees 20 cms to 40 cms dbh will be available under thinning. The annual yield of different species is accordingly fixed as under:-

The yield is now calculated by Hufnagels formula as under:-

$$Y = \frac{C1V1+C2V2+C3V3}{P}$$

(Deodar) C1= Constant representing the fraction of volume of I class trees available for felling during the regeneration period. C1 has been taken as 0.4.

C2= Constant representing the fraction of volume of II class trees available for felling during period. C2 has been taken as 0.3.

C3= Constant representing the fraction of volume of IV and III class trees available for felling during period. C2 has been taken as 0.2.

(Deodar) V1= Volume of trees of I class trees of conifers = 0.00M³

V2= Volume of trees of II class trees of conifers = 0.00 M³

V3= Volume of trees of IV And III class trees of conifers = 538.79M³

P= Period of the plan is 10 year i.e. Working Plan period.

$$\text{Yield} = Y = \frac{C1V1+C2V2+C3V3}{P}$$

$$Y = \frac{0.4 \times 0.00 + 0.3 \times 0.00 + 0.2 \times 538.79}{10} = 10.78 \text{ or say } 10M^3$$

(Kail) C1= Constant representing the fraction of volume of I class trees available for felling during the regeneration period. C1 has been taken as 0.7.

C2= Constant representing the fraction of volume of II class trees available for felling during period. C2 has been taken as 0.6.

C3= Constant representing the fraction of volume of IV and III class trees available for felling during period. C2 has been taken as 0.5.

(Kail) V1= Volume of trees of I class trees of conifers = 0.00M³

V2= Volume of trees of II class trees of conifers = 0.00 M³

V3= Volume of trees of IV and III class trees of conifers = 0.00M³

P= Period of the plan is 10 year i.e. Working Plan period.

$$\text{Yield} = Y = \frac{C1V1+C2V2+C3V3}{P}$$

$$Y = \frac{0.7 \times 0.00 + 0.6 \times 0.00 + 0.5 \times 0.00}{10} = 0.00M^3$$

(Chil) C1= Constant representing the fraction of volume of I class trees available for felling during the regeneration period. C1 has been taken as 0.1.

C2= Constant representing the fraction of volume of II class trees available for felling during period. C2 has been taken as 0.1.

C3= Constant representing the fraction of volume of IV and III class trees available for felling during period. C2 has been taken as 0.1.

(Chil) V1= Volume of trees of I class trees of conifers = 22821.61 M³

V2= Volume of trees of II class trees of conifers = 41790.43 M³

V3= Volume of trees of IV and III class trees of conifers = 9458.76 M³

P= Period of the plan is 10 year i.e. Working Plan period.

$$\text{Yield} = Y = \frac{C1V1+C2V2+C3V3}{P}$$

$$Y = \frac{0.1 \times 22821.61 + 0.1 \times 41790.43 + 0.1 \times 9458.76}{10} = 740.70 \text{ or say } 740 \text{ M}^3$$

Therefore, the annual yield of different species is summarized as under for P.B-IV: -

Table No. – 4.26

Sr. No.	Species	Annual yield (in M3)
1	Deodar	10
2	Kail	0
3	Fir	0
4	Spruce	0
5	Chil	740
	Total	750

4.17 Total Annual prescribed Yield:

The total Annual prescribed yield from the forests of this Working Circle is prescribed as under. However, the yield from PBIII as mentioned above will not be available for commercial sales.

Table No. 4.27

Species	PBI	PBIV	Total
DEODAR	0	10	10
KAIL	0	0	0
FIR	0	0	0
SPRUCE	0	0	0
CHIL	922	740	1662
Total	922	750	1672

4.18 Control of Yield:

All the removals of whatever nature down up to V class shall count towards yield of this Working Circle. It is indeed impossible that the removal of various species in a particular year will conform to or equalize the prescribed yield for each species. In actual practice this is ruled out. It is, therefore, imperative that the marking in the forests should be carried out strictly on silvicultural principles. However, yield will be shown by species in the control forms and deviation statement. The deviation for a year, a period of five year and a plan period shall not exceed +10% of the annual prescribed yield. Felling in the PBI areas will depend on the progress of regeneration. It is therefore most essential that critical survey of felled PBI areas is carried out annually so as to assess the progress of regeneration. It is observed and revealed that regeneration

is not keeping pace with the felling. Further fellings should be discontinued or deferred till such time by which regeneration in the felled PBI areas gain momentum.

4.19 Method of Executing the Felling:

4.19.1 In PB-I Areas

The technique of regeneration marking is given in CCFs, Technical Order No. 2 of the Volume III and detail of marking rules are also contained in Punjab Forest leaflet No. 11 and must be carefully studied by the marking of officer. The detailed treatment map of forest indicating the type of marking carried out shall be prepared and posted in compartment history file. The marking must be aimed at obtaining the maximum natural regeneration. The following general principles are however laid down for guidance of marking officer:

- (i) In seeding fellings, the number of seed bearers retained will be 20-30 healthy, clean boled and vigorously growing trees of Chil per hac. in cooler aspect and more on warmer slopes and 30 to 40 trees per hac. in unfavorable locations particularly on the hot and dry exposed spruce in low elevation will be retained as seed bearers. These trees should invariably be II A to I A diameter classes uniformly spaced all over the areas. This number however will vary depending upon the steepness of the slopes, altitude aspect.
- (ii) Seed bearers should be as evenly distributed as possible. However, quality of seed bearers should not be compromised for the sake of spacing. The seed bearer should be of good quality trees with clean boles, healthy with vigorous growth and possessing well develops crowns.
- (iii) In conformity with the distance consideration as far as possible seed bearers shall be left on Spurs and ridges and not in depressions for better seed dispersal.
- (iv) No marking will be done on slopes exceeding 70%.
- (v) Compact group of healthy poles up to 40-60 cms. Dbh and not less than 0.1 hac. in extent will be retained as advance growth/future crop. It must be clearly understood and remembered that the diameter fixed for retention applies to the diameter at the time of first marking i.e. seedling felling. Once a group is retained it shall not be opened up for regeneration in the subsequent years. Vigour and condition of pole crop must determine its retention rather than its extent.
- (vi) Marking in patches up to 5 hac. in extent of species other than Chil in this working circle shall be done according to the marking rules prescribed for Working Circle under which the species is being managed in this Working Circle.
- (vii) Before under taking any forest for seeding felling it should be ensured that the nursery stock is ready to replace the fellings immediately after the timber has been extracted from the forest. To achieve this objective nursery should be raised two to three years in advance in the vicinity of the area to be under taken for fellings. In case neither the nursery has been raised nor stock is available, no markings/fellings shall be done and the yield for the particular year should be considered as obtained.
- (viii) Regeneration survey will be carried out in all the felled areas and the success of regeneration will be revised every 5th year. In case the regeneration is not keeping pace with the felling, further fellings shall not be carried out.

- (ix) The secondary felling will be carried out keeping in view the progress of regeneration and when the seedlings have attained height of over two meters. The Number of trees retained during the seeding fellings shall reduce to 50% during secondary fellings.
- (x) The final fellings shall be carried out when average height of new crop exceeds three meters and the crop has been subjected to at least three control burnings.
- (xi) Groups of pole crop retained as part of future crop shall be thinned.
- (xii) Only selection-cum-improvement marking will be carried out in 10 m wide belt on either side of main roads for road protection.
- (xiii) In case of serious fires, heavy wind damage in PB-I areas under exploitations, marking should be revised.
- (xiv) All IV class and over trees of broad leaved species will be marked for felling to extend chil unless same are required to be retained for protection purpose.
- (xv) Marking should be carried out by an officer not below the rank of F.R. and at least 50% of the marking should be checked by a Class-I Gazetted officer.

4.19.2 In PB-II & PB-III Areas: No felling of any kind and magnitude will be done in PB-II and PB-III areas in order to safeguard future yield. However, salvage marking of dead, uprooted trees will be done to clear these forests from fire hazards and improvement of the crop. The yield removed from these PBs shall be counted for yields towards the yield of the Working Circles.

4.19.3 In PB-IV Areas: All over wood leaving 2-3 trees per hac. as fire insurance shall be removed in these areas where the regeneration has been fully established. These fellings will therefore conform more or less to final fellings. Beside this, the thinning in patches of advance growth is to be done. The following general principles are laid down for the guidance of marking officer:

- (i) No attempt should be made to obtain or induce regeneration. The marking should aim at freeing the established regeneration by removing the over wood. Thus, first and second class trees standing over the established regeneration will be marked.
- (ii) All solitary II and III class trees standing amongst young crop and which are likely to develop into wolf trees shall be marked.
- (iii) Thinnings in a group of poles and patches of advance growth retained shall be carried out wherever necessary.
- (iv) All marked trees likely to damage young crop under wealth should be lopped before felling.
- (v) Broad leaved trees should not be marked unnecessarily on the pretext of improvement fellings. These should, however be lopped where found suppressing the young crop.

4.19.4 Thinning: A thinning consists lessening the crowded condition of the crowns of the best trees in a canopy so as to favour their development. The main aim of thinning will be to assist the elite trees by providing them optimum growing space.

According to the British Commonwealth Forest Terminology Part-I Empire Forestry Association, London, 1953 thinning means “Thinning is a felling made in an immature stand for the purpose of improving the growth and form of the trees that remain without permanently breaking the canopy.”

Thinning is done to regulate the distribution of growing space for the purpose of improving the growth and form of tree that are left. The object of thinning is to distribute growth potential of site amongst the trees retained, increase the net yield of timber and money from a stand, obtain earlier returns from capital invested in a stand, produce different smaller size of timber which can meet a different object of management, maintain hygienic conditions in the stand, obtain timber of the desired quality and mechanical strength, and to ensure decomposition of raw humus in temperate forests.

Thinning varies with the nature of the crop and the methods of thinning used in regular crops are different from that used in irregular crops. In present plan thinning will be carried out in accordance with the principles of thinning laid down in Punjab Forest Leaflet No. 1, 1A and book Principles and Practices of silviculture by L.S. Khanna. The crops to be thinned fall mainly in the categories discussed in the following paragraphs.

- v) Pure Deodar crops.
- vi) Pure Kail crops.
- vii) Mixed Deodar crops and Kail crops.
- viii) Deodar or Kail mixed with Spruce.

4.19.4.1 Thinning in pure Deodar crop:-Selective and increment thinnings as discussed above will be carried out in deodar crops. In young crops, spacing equal to four times the girth will be quite suitable. In crops beyond pole stage, C/D grade thinning will be carried out.

4.19.4.2 Thinning in pure Kail crop:-Kail crop suffers severely from snow damage if not properly thinned in its early stages. The thinning should be light in the early stages, so that the boles get cleaned. Light and frequent thinnings should, therefore, be the rule in early stages. After the boles have been cleaned of their side branches, the intensity of thinning should be increased and should be heavier than in case of deodar. In young pole crops, the thumb rule will be to have the spacing in feet equal to one and a half times the average diameter in inches. Beyond pole stage, D grade thinning should be carried out.

4.19.4.3 Thinning in Mixed Crops of Kail and Deodar:-Thinning in mixed crops require greater skill and will depend upon the type of mixture for carrying out thinnings in usual types of Deodar-Kail mixtures met with in these forests, the following general principles are laid down:-

- iv) In even-aged stands, where the mixture is by single trees of deodar and kail, the thinning will be carried out as in pure deodar crop favouring deodar over kail.
- v) Where the mixture is by groups, each group will be thinned in the same way as pure stands of that crop. Along the periphery of these groups where kail and deodar grow mixed, thinning will be done as in deodar crop favouring deodar over kail.
- vi) Isolated kail trees, standing over compact groups of promising saplings or poles of deodar, will be removed and deodar will be encouraged to fill up the gaps created by felling of kail. But where deodar poles or saplings are already suppressed and are not likely to respond to the opening, kail trees should not be marked to free such suppressed deodar.

4.19.4.4 Thinning in Mixed Crops of Deodar or Kail with Spruce:-In deodar-spruce mixed crops, thinning will be carried out to favour deodar and to suit its silvicultural requirements.

Spruce will be treated in the same way as kail in deodar-kail mixture. In mixed crop of kail and spruce, thinning will be carried out strictly in accordance with the silvicultural requirement of the crop, treating kail and spruce alike and removing inferior trees of either species for the benefit of better individuals.

4.19.4.5 Necessity

- v) Thinnings are made not only to increase increment but also as a measure of fire protection; woods which are well thinned at an early date and which are free from an excess of suppressed and inflammable material are much less subject to fire damage than unthinned crops.
- vi) In areas under concentrated regeneration (i.e. PB I and the youngest PB under the shelter wood system) early and repeated thinning are so important for the optimum development of the crop that periodical thinning must be carried out even though the disposal of the cut material involves expenditure of considerable sums of money. Thinning promotes not only diameter but height increment also.
- vii) The frequency of thinning cannot be rigidly prescribed as it depends upon the species; kail closes up in shorter time than deodar and thus requires shorter thinning interval. The aim should be to prevent crowding rather than to await it and then thin the crop.
- viii) Crown thinning can be carried out in PB II areas to ensure optimum space for the crowns of elite trees by removing their competitors and also the dominated trees which press the crowns of the elites strongly upwards and restrict their growth.

4.20 Sequence of felling:

The following tabular statement gives the order of fellings in PB-I and PB-IV areas:-

Table No. 4.28

Felling programme for PB-I

Year	Range	Name of Forest	Comptt. No.	Area in Hac.	Allotment	Nature of felling
1	2	3	4	5	6	7
2020-21	Arsu	-	-	-	-	-
2021-22	Chowai	-	-	-	-	-
2022-23	Nither	-	-	-	-	-
2023-24	Chowai	SathabandriTrijha kar	1/13 C-I	24.92 (Part)	PB-I	Seedling felling
2024-25	Chowai	-	-	-	-	-
2025-26	Chowai	SathabandriTrijha kar	1/13 C-I	20 (Part)	PB-I	Seedling felling
2026-27	Chowai	Bungbindraban	1/27 C-IV	24.94 (Part)	PB-I	Seedling felling
2027-28	-	-	-	-	-	-
2028-29	Chowai	Bungbindraban	1/27 C-IV	22 (Part)	PB-I	Seedling felling
2029-30	Chowai	-	-	-	-	-

Felling programme for PB-IV

Year	Range	Name of Forest	Comptt. No.	Area in Hac.	Allotment	Nature of felling
1	2	3	4	5	6	7
2020-21	-	-	-	-	-	-
2021-22	-	-	-	-	-	-
2022-23	Arsu	Tikkar	1/1, C-I(a)	50 (Part)	PB-IV	Final Felling

2023-24	Chowai	Parkothsil	1/26, C-I (b)	29.14	PB-IV	Final Felling
2024-25	Arsu	Tikkar	1/1, C-I(a)	57.24 (Part)	PB-IV	Final Felling
2025-26	Arsu	Tikkar	1/1, C-II (a)	90 (Part)	PB-IV	Final Felling
2026-27	Arsu	Tikkar	1/1, C-II (a)	90.49 (Part)	PB-IV	Final Felling
2027-28	Nither	Gwan	1/17, C-IV	29.54	PB-IV	Final Felling
2028-29	Arsu	Siarunal	2/3, C-II	38.44	PB-IV	Final Felling
2029-30	-	-	-	-	-	-

4.21 Subsidiary Silvicultural Operations, Cleaning and Thinning:

Following subsidiary silvicultural operations are prescribed:-

(I) Subsidiary Silvicultural Operations in PB-I

The following subsidiary operations will be carried out soon after the fellings in this Periodic block.

- (a) Removal of unfit and inferior stems of different species left in exploitation areas will be removed as fuel wood.
- (b) Felling refuse will be disposed off in accordance with the instructions laid down in Punjab Forest leaflet No. 6.
- (c) Bushes and weeds competing with the regeneration will be cleared off from the regeneration area.
- (d) All debris lying on ground shall be cleared to provide a clean bed for new crop to come up and also to reduce the fire hazards.
- (e) The villagers should be encouraged to collect the left out material from the sold lot, so as to reduce the cost.
- (f) Unfit refuse should be burnt under control which will provide a clean bed and also act as stimulant to boost up regeneration.
- (g) These operations shall be carried out in winter only and in the presence of Range Officer to avoid accidental fires.

4.21.1 Artificial Regeneration: No doubt the judicious manipulations of canopy will induce natural regeneration provided the closure is effective. The natural reproduction, however, depends upon good seed year which may not synchronize with the year of fellings. Thus, if only natural regeneration is relied upon, there is a danger of the area being invaded by weeds and bushes. In view of these impediments, artificial sowing and planting will be taken up immediately after fellings. It will also assist the regeneration in those areas. The artificial regeneration will also be carried out in areas which are partially stocked or are blank and in PB-IV areas. For artificial regeneration the following points should be kept in mind:

- (i) The Chil seedling should be raised in polythene bags. They should be at least nine month old at the time of planting and plants should be at least 20 cms in height and possess good vigour. Planting should be done with the onset of monsoons. In areas located above 1500 m elevations,

winter planting may also be carried out but it should be done to the minimum extent as it has been observed in the field that the monkey damage is more severe during winter planting.

(ii) Collection of seeds and raising of seedling in the nurseries should be scientifically or carefully done as success depends on the state of plants, planted in the field.

(iii) The seeds should be soaked in cold water at least 24 hours before sowing it in the nurseries.

(iv) Before planting and sowing the area should be closed to grazing by fencing.

(v) The adoption of the proper technique and the time bound program for planting is a must.

The closed area should be well protected and to ensure regeneration of PB-I areas.

4.21.2 Planting Programme: The planting program has been given in the plantation (overlapping) Working Circle.

4.21.3 Bush cutting/weeding: Bush cutting is carried out lightly so as to afford seed bed as well as protection against drought to the young seedlings. Weeding is an essential and most important activity that young regeneration should be properly weeded by freeing it from thick grasses and over head shade of bushes. The cut material should be disposed of by using it in interlacing of barbed wire fencing or by burring it safely outside the plantation area to reduce fire hazards.

4.21.4 Cleaning: It should be carried out in the early stages of plantations and should be continued till the area is suitable for thinnings, so as to produce healthy stems and minimize fire hazards. The cut material should be collected in open place or nalas and burnt unless required by the right holders.

4.22 Resin Tapping: Till 1984 the resin tapping was being done by French cup and lip method. By this method serious loss of timber was observed partly due to the inherent hacking action involved in the use of freshening tools i.e. adze which makes it difficult to control the depth of the blaze and partly due to carelessness on the part of tapper in use of the tools. Strong wind and forest fire caused serious damage/loss to the trees tapped by this method. The butt end log of 6 feet length of the trees used to yield no timber. FRI and college of Dehradun developed a modern method of resin tapping called Rill Method which was introduced in H.P. in the year 1984 when about 21000 resin blazes were tapped under this method in district Kangra. Encouraged by the results more and more number blazes were brought under this method and finally in 1991 complete Switching over to this method was done.

The resin tapping works in Himachal Pradesh were handed over by the HP Forest Department to HP State Forest Corporation Ltd. during 1975-76 vide H.P. Govt. Notification No. 10-26/72 Ft. dated 30-5-1975.

4.22.1 Factor affecting the Resin Tapping: The factors affecting the resin yield are the Temperature, Rainfall and Humidity. A positive effect of air temperature and Soil temperature or both on resin yield has been observed in different species and of this soil temperature has more significant effect. Both soil temperature and air temperature affect the sapwood temperature of the pine trees and lowering the temperature near tree. Resin yield is influenced by fluctuations of temperature, the optimum yield being obtained at 26.7°C and above, below a critical temperature of 25.6°C, the yield decreases significantly. Elevation and aspect also influence the temperature and hence play a vital role in the yield of Resin from any locality. Resin yield is maximum during the month of May-June when the temperature is maximum. Resin Blazes on the Southern side of

the tree give better yield than those away from the Sun, Due to rise in humidity, the resin yield decreases from August to mid September and again increased from mid September to mid November.

4.22.2 Methodology of Resin Tapping: The method of resin tapping in vogue is the Rill method which will continue till further orders of the competent authority. The specification in the Rill method is as under:-

4.22.3 Preparatory step for Resin Tapping

4.22.3.1 Tappable Diameter: In view of the health of tree and yield of resin thereof the tappable diameter for resin tapping was revised from time to time. Investigation revealed that the yield of resin decreases as the diameter decreases and mortality of the trees increases. According to the latest directions of Pr CCF HP the tappable diameter for Rill method is 35 cm for new trees and 30cm for that tree which were under tapping as per old directions. According to the normal practice of resin tapping by Rill method, the minimum size of trees for tapping is 30 cm in diameter in case of trees already under tapping and 35 cm for new crop. Investigation revealed that the yield of resin decreases as the diameter decreases and mortality of the trees increases. It was predicted that highest yield of resin could be obtained from trees of 45.4 cm diameter.

4.22.3.2 Enumeration

As per Resin Tapping Manual under Section-II titled “Enumerations” the practice of enumerating tapping areas after four years should be continued till the revised instructions/directions are issued by the Pr.C.C.F H.P. During the time of such enumeration new crop, which has attained tappable diameter should be included for tapping. The trees for enumeration are selected as under;-

- i) Large scale Chil plantations have been raised in the past. Some of these plantations have attained tappable diameter and some are becoming fit for tapping year after year. At the time of enumerations such plantations should be gone over and should be included for tapping, if the trees have attained tappable diameter.
- ii) Chil trees, which have been tapped. 70% or more of the girth at breast height will not be allowed to have fresh channels. Such trees can however be tapped in height. Chil blazes in large number (say one section) shall be discontinued only after a joint inspection by ACF and SDM concerned or as per directions of Pr. CCF (HP).
- iii) The trees which have no space for tapping vertically or laterally should be deleted. Health of trees should overweigh the revenue earning consideration as contained in Himachal Pradesh technical order Vol IV by Sh. M.P. Gupta, IFS Himachal Pradesh. The joint inspection as given in Resin Tapping Manual is mandatory if the crop needs rest or tree are to be deleted and the same is to be got approved from the CCF Rampur Forest Circle after the joint inspection is done by concerned AM of HPSFC and RO of Forest Department in case the SDM or ACF is not posted.
- iv) Area having very scattered tappable trees (less than 8 trees per hac.) should normally not be taken up for tapping.
- v) As trees marked for felling are ordinarily to be tapped to death, the marking of such trees should be done as far as possible before the resin enumeration is carried out.
- vi) **Number of Blazes per tree:-**There will be one blaze per tree (enumerated for resin tapping) in the light continuous tapping for heavy tapping the idea is to put as many blazes as possible leaving at breast height at least 7.5 cm of un tapped bark between two channels.
- vii) **Punch marking:** -Every tree enumerated for tapping shall be serially numbered and the number of blazes indicated like 567/2001. The upper figure showing the serial

number of tree/blaze and the lower figure showing the year of enumeration. The unit of Enumeration will be the compartment (or sub compartment where it exists.). For marking these numbers the bark is smoothened on the north side of the tree at about 1.5 mts. from the ground and the number are punched with 3 cm figure punches.

- viii) **Tools:** The list of tools required for resin with its specification is listed under the Himachal Pradesh Forest Manual technical order Vol IV by MP Gupta, IFS, CCF. The field functionaries should be well acquainted with the specification of these tools so that the tapping by Rill method is done as per its methodology.

4.22.3.3 Time of Enumeration

Re-enumeration work when done must be taken in hand immediately after tapping season is over viz by 15th of November and completed by the 31st December. When the enumeration is done in a forest for the first time, this work can be taken in hand earlier and finished by 1st of December. One forest Guard with three labourers can enumerate 400 trees a day. For enumeration of blazes to be tapped under heavy tapping, marking of trees must be completed during the summer.

4.23 Method of Resin Tapping:

i) Cup and lip method

French cup and lip method was used for resin tapping of pine trees in India since inspection. In this method the surface where channel/blaze is to be cut is made smooth by scrapping the dead bark over a width of 15 cm and to a height of 5 cm over that part of tree which will be lapped during the year leaving 6 mm hunches of bark. The position of the channel is then marked. The total length of the channel to be tapped in one season is 48 cm (including 10 cm length of the channel from the ground used for hanging the cup at the beginning and 38 cm in subsequent years. A maximum depth 2.5 cm is recommended but the tapper makes much deeper blazes with the hope of getting more resin. Till 1991 this method was used for tapping on Govt. and private land. This method has been replaced by Rill Method on Govt. Lands and private land.

ii) Rill method

In India Rill method was introduced by FRI in 1976. In HP Rill method of resin tapping was introduced on an experimental scale in 1984, when 21000 blazes were tapped under this method in District Kangra and was gradually extended to other areas. Finally in 1991, HP State Frost Corporation switched over to Rill method of tapping in the entire state. The specification in the Rill method is as under:-

- i) **Bark shaving: -**
Shaving bark= 45x 30 cm
Bark to be left in the shaved area= 2 mm
- ii) **Marking with Blaze frame and centre grove marking:-**
Distance from ground level= 15 cm
Length = 38 cm Width = 20 cm
- iii) **Centre grove cutting**
Depth= 4mm
Width= 7-9 mm
- iv) **Fixing the lip and resin pot** Lip should be fixed with the help of two bullock shoes nails
Pot= 2 cm below the midpoint of the lip
- v) **Size of Rills**
Average width of rills = 6 to 7 mm

Depth of rill = 2 mm

Number of rills in a season = 32

Distance between two channels = 7.5 cm

Width of bark between rills = 5mm

vi) **Angle of Rill** = Angle of Rill with the Central groove – 40 degrees.

vii) **Freshening of Rill:-** Freshening of rill is done with the help of acid i.e. Nitric acid (Specific gravity 425) 35 Ltr. Suphuric acid (sp gravity 1.840) 2.5 Ltr.

viii) **Spacing between the Channel:** = 7.5 cm

ix) **Maximum height to which a tree should be tapped:** about 2.10 m for five year. New channel should be started on 6th year.

9 **Resin Collection.** In the collection of Resin from resin blazes, the pot should be removed from the tree and the resin should be poured into the collection Balti.

10 **Resetting of crop.** During summer season the Chil area catch fire and the blazes are burnt. In such areas resetting of crop becomes necessary. Beside this the damage bill can also be raised against HPSFDC for unlawful activities after required joint inspection. The resin tapping in burnt blaze is stopped and new blaze is made. The new blaze is tapped at height in such a way that length tapped does not exceed 38 cm. Next year the old blaze is continued for tapping.

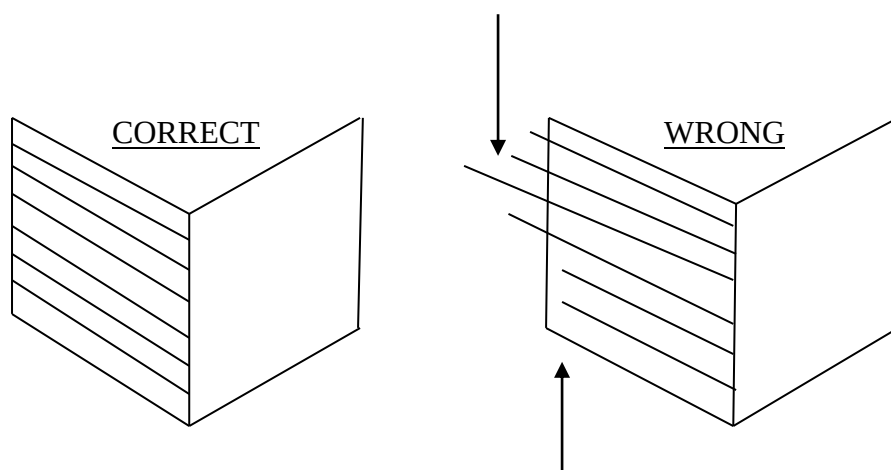
11 **Time Schedule for Resin Tapping is tabulated in table No. 4.29**

Table No. 4.29

Time Schedule for Resin Tapping		
Sr. No.	Component	Time Schedule
1	2	3
1.	Enumeration	16 th November to 31 st December
2.	Deletion of resin blazes/Forest kept on rest or handing over lots to HPSFC	Before 15 th March
3.	Crop setting	15 th February to 15 th March.
4.	Tapping season.	15 th March to 15 th November.

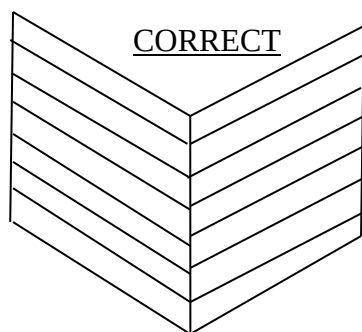
1	2	3
5.	Final scraping of resin	1 st Nov. to 15 Nov. in colder area 16 Nov to 30 th Nov. in warmer areas
6.	Preparation of damage bills Joint inspection	End of December

RILLS EXTENDING BEYOND BLAZE LIMIT

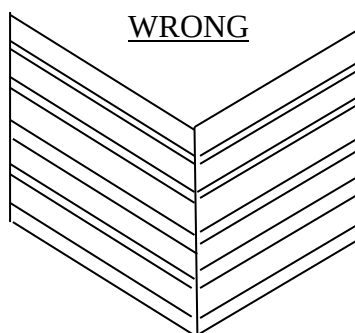


RILLS FALLING SHORT OF BLAZE LIMIT

Figure 1 (a) showing rills extending beyond and falling short of blaze frame.



**EQUAL SPACE BETWEEN
CONSECUTIVE RILLS**



**UNEQUAL SPACES BETWEEN
CONSECUTIVE RILLS**

Figure 1 (b) showing equal and unequal space between the consecutive rills.

4.23.1 Do and don't

- i) The approved Resin Manual and directions issued by the Pr CCF HP from time to time thereof is to be followed strictly.
- ii) Time schedule for the process of resin tapping should be followed.
- iii) The Rill methods require skilled labour and appropriate tools listed in the approved manual which should be ensured by the field functionaries.
- iv) The specification of stimulant and its application during resin tapping should be strictly followed. It should be known by the labour that the acid mixture does not help in manufacturing the resin in any way but it is used to open the ducts of the resin. The over doze of the acid can harm the health of the tree.
- v) Health of trees should outweigh the revenue earning consideration.
- vi) Specific protective and preventing measures should be made against fire for resin tapping areas.
- vii) The operation of resin tapping and record maintained thereof should be monitored by the field functionaries regularly taking appropriate action for violation if any.
- viii) The healing process of the tapped blazes should also be monitored by field functionaries during the inspection of the resin tapping area.

4.23.2 Crop setting

Crop setting must be completed between 15 February and 15 March every year. Freshening is repeated at weekly interval. In the collection of Resin from resin blazes, the pot should be removed from the trees and the resin should be poured into the collection Balti. The complete method of tapping has been explained in H.P. Forest Manual Vol. IV at Page No. 68 to 81.

The HPSFDC has now adopted rill method for the extraction of resin from the Chil trees. The old method of cup and lip has caused heavy damage to the Chil trees. The pace of healing and occlusion is very slow. The forests, from which the resin was extracted through cup and lip method forest, should be given rest for a period of five year for recovering and healing. The yield of resin is fixed 35 qlt per thousand blazes so that there is no over exploitation of Chil trees and to avoid their drying up. At present rill method of resin tapping is being followed. The standards of

tapping as developed by FRI are not being maintained in the field. The notable deviations are as under:-

- (i) The length and width of blazes is often more than 38 cm and 20cm, respectively.
- (ii) The depth of rills is more than prescribed 2mm.
- (iii) The distance between two rills is not always as per standards and quite often the rills inter-mingle with each other because the labour does not use the guide with the knife.
- (iv) The proportion of nitric and sulphuric acid in the solution to be applied to the rills is not as per guidelines. The amount of sulphuric acid is kept more than required and excessive quantity of acid solution is applied in order to extract more resin.
- (v) The minimal distance between two parallel resin blazes is not being maintained at 3 inch. In some trees no distance has been left between two blazes. The trees are being practically girdled and no cambium is left for healing up in future.

The above defects in the resin tapping are causing immense damage to the chil trees. The first three defects are exposing more than required surface area of trees. This leads to increase in fire hazards. The excessive application of acid solution and more proportion of sulphuric acid causes drying of the Chil trees, sometimes as early as after 3-4 years of starting resin tapping. The last defect caused long term damage to the Chil trees. In the absence of any healing distance between two blazes there is little healing if after several years of tapping.

The field staff should be made conversant with the standards of Rill method. They should be asked to report the defective tapping as soon as it is detected in the field. They should also raise damage bills immediately and should not wait till the end of tapping season.

4.24 Other Regulations:

4.24.1 Fire Protection: The Chil forests are vulnerable to risk of fire. The whole Working Circle will be under strict vigil against fire hazard by adopting various means like control burning, cleaning of fire line, construction of contour path and inspection path and by employing fire watchers especially during fire seasons. Most of the damage from fires occurs during pre-monsoon summer months of April to June when lot of inflammable material is present on the forest floor. Incendiary forest fires are very common and as such the forests are required to be strictly protected from these. The forests floor should be kept clean of inflammable material such as debris, unwanted bushes, weeds, needles and grass. The fire lines, inspection paths and bridle paths should be kept clean of needles especially during summer season. Fire watcher should be employed during dry month's relations with the local protection of the forest from fire. Besides this maintaining cordial relations with the local people and educating them properly with regard and to importance of forest conservation, rights and duties and social obligation as enshrined in Article 51 A(g) of the Constitution of India read with Section 79 of the Indian Forest Act, 1927.

The detail description is given in the Forest Protection (overlapping) Working Circle under Chapter No. IX. However, the following fire protection measures are prescribed:-

a) Direct Measures

- i) **Maintenance of existing fire lines:** All existing fire lines should be maintained by control burning and bush cutting during winters.

- ii) **Cleaning of roads and paths:** All roads and paths - crossing forests should be kept swept clean so that there is no inflammable material. Labour is engaged under MGNREGA scheme.
- iii) **Timely completion of forest extraction operations:** Extraction operations in all govt. and private forest must be completed within the contractual period.
- iv) **Control burning along roads and paths:** A belt of 1.5 widths on uphill side and 3 m width on the downhill side of every road should be control burnt annually during winter.
- v) **Application of IFA 1927:** Provision of Section 33 of IFA- 1927 concerning right holders in case of fires should be applied strictly. Habitual and mischievous offenders should, however, be dealt with under Section 435 of IPC or under the provision of Prevention of Damage to Public Property Act, 1984.
- vi) **Salvage operations:** The salvage removals should be carried out timely and regularly to exclude fire hazards.
- vii) **Disposal of felling refuge:** Immediately on close of felling operations, felling refuge should be collected and control burnt at safe points inside or outside the operations areas so that fire hazards are eliminated.
- viii) **Publicity:** Sign boards carrying educative slogans and warnings should be displayed at conspicuous points all over for information of the general masses.
- ix) **Maintenance of fire record:** All fires should be properly documented. A detailed fire report in prescribed proforma along with location map in respect of every fire should be submitted by R.Os to DFO within a week. A fire cases register should be maintained by R.Os. The methodology for assessment of fire loss developed by CCF Forest Protection, Bilaspur should be followed strictly.
- b) **Indirect Measures:** With the object of preventing fires by winning the goodwill of right holders and general public living in the vicinity of forests, should meet their reasonable demands for fuel, grazing and grass cutting etc.

4.24.2 Right Holder Requirements: Demand of right holder for timber will be met from the Salvage/Dry Standing trees as per **H.P. Govt. notification FFE-B-A (3) 4/2015 dated Shimla -2, 26-Feb-2016, See Appendix No. XXIII.** The demand of right holders will be met from the forest as per the provision of Forest Settlement Report subject to silvicultural principles. No trees should be marked from PB-I area after the marking of seedling fellings have been done till the regeneration is fully established. All the trees marked to meet out the demand of the right holders shall count towards the prescribed yield.

4.24.3 Closures: All PB-I areas should be closed immediately after felling work is over. The duration will be about 15-20 years or till such lesser period when plants attain the height of more than 3 mts., Govt. notification for such closure should be got issued under Section 30 (b) of Indian Forest Act, 1927 well in time.

4.24.4 Grazing and grass cutting: The grass cutting will be prohibited in all the PB-I areas after the commencement of regeneration operations till the young crop is beyond the damage i.e. 75 cms and above. The grass cutting shall be allowed under strict supervision in order to avoid damage to the young seedlings. Grazing shall be strictly prohibited in the regeneration areas during the closure period as notified under Section 30 (b) of the Indian forest Act, 1927.

4.24.5 Demarcation of Forests: Pucca Masonry boundary pillars/construction of boundary pillars as per latest instructions issued by Pr.C.C.F. H.P. vide letter No. Fts. Engg.(design) 98/Vol-III dated 19-10-2012 shall be put along the boundary of demarcated and Undemarcated protected forest indicating the straight line distance between two conjunctive pillars and noting forward and backward bearings at each boundary pillar. The boundary pillar numbers will be engraved on the pillars when cement plastering is fresh. After white washing the number will be painting black.

4.24.6 Regeneration Survey: The regeneration survey of felled PB-I areas shall be carried out as per the National working plan code during every III year to assess the progress of regeneration, as the progress of regeneration is directly linked with felling.

CHAPTER V

THE PROTECTION WORKING CIRCLE

5.1 General Constitution:

This working circle comprises of all the conifers and Broad leaved forests which are inaccessible and are situated on the steep and precipitous grounds where commercial working is not possible and the removal of which will create soil erosion problems and will encourage landslides. In short, this circle contains all the Reserve Forests, I & II Class Demarcated and III Class Undemarcated Protected Forests which has not been included in any of the working circle, being either inaccessible due to steep and difficult precipitous terrain and poor stocking. Their chief value has been in being most important from the point of view of the protection in preventing denudation and maintaining an equitable flow of water in the streams and rivers which have their sources in the hills.

All the Forests allotted to the Improvement Working Circle of the plan under revision have also been transferred to this working circle. All these Forests are III Class Undemarcated Protected Forests that lies below II Class Demarcated Protected Forest and extend up to the river bed. These are very extensive area interspersed with cultivation and villages.

The forest allotted to this working circle render intangible benefits than the tangible ones. It includes all the areas allotted to protection working circle in the previous plan and also the Forests of Improvement Working Circle of Negi's Plan. The total area of this Working Circle is **47984.86 hectare** which is **89.36%** of the total area of the Anni Forest Division.

5.2 General Character of Vegetation:

Because of the varied types of areas included in this working circle and their scattered distribution throughout the tract, almost every type of vegetation typical to this area is encountered in the forests allotted to this working circle and has been described in detail in Chapter II of part I of this working plan. However, the principal forest types found in this working circle are as under:

9 C1 (b) Upper or Himalayan Chil pine forest.

12 C1 (a) Ban oak forest (*Quercus incana*).

12 C1 (b) Mohru oak forest.

12 C1 (c) Moist Deodar forest.

12C1(d) Western mixed coniferous forest (Spruce, Blue pine and silver fir).

12C1 (e) Moist temperate deciduous forest.

12C1 (f) Low level Blue Pine forest.

12C II (a) Kharsu Oak forest (*Quercus semecarpifolia*).

12D.s.2 Himalayan temperate park lands.

12D.s.2 Himalayan temperate pastures.

12 S.1 Alder forests.

14C1 (a) Western Himalayan sub-alpine high level Fir Forests.

14C1 (b) Western Himalayan sub alpine birch/Fir forest.

14D.S.1Sub-alpine pastures.

15CIII Alpine pasture.

15 E-1 Dwarf Rhododendron scrub.

5.3 Special objects of Management:

Without prejudice to general objects of managements, the special objects of managements of the forest allotted to this Working Circle are:

- (i) To protect the hill sides from further denudation and erosion by preserving and enhancing the forest cover and by undertaking the effective soil conservation works in a planned manner, where ever necessary.
- (ii) To conserve moisture and streamline the flow of water in streams and nallas by protecting and enhancing vegetation cover in the watershed.
- (iii) Consistent with above, to provide for grazing requirements of local people of sheep goats and buffaloes and migratory grazers who come to these areas with their flocks for summer grazing and also to meet the demand of right holders for timber and fuel wood in accordance with notification No.FFE-B-A (3) 4/2015 dated Shimla -2, 26-Feb-2016 (copy of the notification given in Appendix No.-XXIII).
- (v) To protect and preserve the valuable forest wealth from the indiscriminate felling and lopping of trees and to preserve/ protect the area from encroachment.
- (vi) To raise the plantation of Timber and further species for meeting the local demand.
- (v) To protect the forest, no felling of trees will be allowed from precipitous slopes, nallas and banks of rivers to ensure ecological security of the tract.
- (vi) To preserve and improve the biodiversity of the area.

5.4 Area Statement:

The total area of this working circle **47984.86 hectare** which works out to be **89.36%** of the total area of the division. The distribution of these forests range wise and by legal status is tabulated in table No. 5.1

Table No 5.1

Name of Range	RF	DPF I Class	DPF II Class	III Class forests (UPF)	Total in Ha.
Arsu	1619.57	1607.03	10622.60	9732.72	23581.92
Chowai	0	139.22	4307.57	9198.94	13645.73

Nither	0	918.63	357.74	9480.84	10757.21
Total	1619.57	2664.88	15287.91	28412.50	47984.86

The forest wise detail of specific allotment is given in **Appendix No.-I**

5.5 Blocks and Compartment:

No change has been made in the existing compartments and sub compartments.

5.6 Analysis and Valuation of the Crop:

Most of the Reserve, I & II Class Demarcated and III Class (Undemarcated Protected Forests) are rocky, steep, precipitous, inaccessible and unworkable or high lying alpine pastures. Their main value lies in being most important from the point of view of protection in preventing erosion and denudation of the hill slopes and in maintaining and equitable flow of water in the river and streams. Unless these hills are protected, mountain falls shall start eroding and flood will play the havoc. They will silt up the reservoirs, break dams and embankments ruin the roads, bridges and over run the field, villages and town in the foot hill and plains bringing misery to the thousands of people. Besides this, the Forests transferred from Improvement Working Circle of Negi's Plan. These forests are situated below II class Demarcated Protected Forests needs protection from all biotic interference. In view of the objects of management of forest allotted to this Working Circle, no detailed analysis and valuation of the crop is considered necessary.

5.6.1 Stock Map: The stock maps on 4"=1 Miles scale, have been prepared for all the forests separately.

5.6.2 Density: The crown density of each compartment has been estimated ocularly at the time of field inspection of the forests and has been recorded in respective compartments history files. The average density of the crop varies from 0.2 to 0.5

5.6.3 Site Quality: The site quality of the crop varies from place to place overall quality conform to II/III of the FRI quality classes. The site quality of individual compartments/ sub compartment has been indicated in the compartment history files.

5.6.4 Enumerations: As given in the Chapter VIII under paragraph 8.7, sampled enumerations has been carried out. The enumeration was carried out on the grid system bases in the Sample IDs (Plots) of size 0.1 Ha each. Total 169 Nos. sample plots pertaining to this working circle were enumerated. The detailed forest wise enumeration results are given in **Appendix No-IX**. The results have been analyzed statistically and growing stock has been assessed / extrapolated **Appendix No-XIII**.

Table No.:-5.2

Species wise No. and Volume in cubic mts. (Estimated / extrapolated growing stock) for Protection Working Circle

Total area (Area = 47984.86 Ha)															
Sr. No.	Spec ies Cod e	Botanical Name	Common / Local Names		10-20 V	20-30 IV	30-40 III	40-50 IIA	50-60 IIB	60-70 IA	70-80 IB	80-90 IC	90-100 ID	100 over IE	Total
1	241	<i>Cedrus deodara</i>	Deodar	Number	789337	701317	477009	278255	150485	99377	65305	19875	19875	11357	2612194
				Volume m3	47360.21	98184.41	200343.89	353384.36	362669.00	351794.33	314116.28	121041.10	140717.73	80410.13	2070021.43
2	926	<i>Pinus wallichiana</i>	Kail	Number	570708	388990	295291	141967	59626	48269	17036	5679	0	2839	1530405
				Volume m3	34242.45	54458.56	124022.41	180298.14	143699.04	170871.53	81943.38	34583.17	0.00	20102.53	844221.21
3	2	<i>Abies pindrow</i>	Fir	Number	51108.134 91	11357	45429	48269	14197	17036	2839	2839	8518	5679	207272
				Volume m3	3066.4880 95	1135.74	32567.24	82056.95	44151.75	86883.83	20102.53	24106.00	79558.33	53038.89	426667.75
4	921	<i>Piceasmithiana</i>	Spruce	Number	176039	190236	170360	193075	173200	187396	122092	51108	28393	45429	1337330
				Volume m3	10562.35	26405.87	142790.45	328227.80	538651.35	955722.12	864408.92	433908.07	265194.43	424311.09	3990182.45
5	929	<i>Pinus roxburghii</i>	Chil	Number	1479297	1178326	516760	159003	88020	45429	22715	17036	2839	2839	3512265
				Volume m3	88757.79	164965.70	217039.21	201933.92	212127.15	160820.26	109257.84	103749.51	20102.53	20102.53	1298856.46
6	1162	<i>Taxus baccata</i>	Taxus	Number	22715	19875	2839	2839	0	0	0	0	0	0	48269
				Volume m3	2362.33	4650.84	1325.97	2331.10	0.00	0.00	0.00	0.00	0.00	0.00	10670.24
7	1010	<i>Quercus incana</i>	Ban oak	Number	107895	88020	79502	34072	17036	8518	2839	22715	2839	0	363436
				Volume m3	14457.92	27550.12	52232.51	40920.58	33629.15	25520.00	12166.58	133040.15	21928.23	0.00	361445.25
8	1006	<i>Quercus dilatata/ floribunda</i>	Mohru Oak	Number	73823	96538	105056	73823	14197	8518	5679	5679	0	2839	386150
				Volume m3	9892.26	28961.28	105055.61	132881.15	42590.11	39182.90	35775.69	45429.45	0.00	34639.96	474408.42
9	1017	<i>Quercus semecarpifolia</i>	Kharshu Oak	Number	0	11357	11357	8518	0	0	0	0	0	0	31233
				Volume m3	0.00	3407.21	11357.36	15332.44	0.00	0.00	0.00	0.00	0.00	0.00	30097.01
10	651	<i>Juglans regia</i>	Walnut	Number	8518	2839	2839	0	0	17036	5679	0	0	0	36911

				Volume m3	672.92	567.87	2271.47	0.00	0.00	64736.97	28961.28	0.00	0.00	0.00	97210.51
11	38	<i>Aesculus indica</i>	HC Nut	Number	0	0	2839	8518	0	0	2839	0	0	2839	17036
				Volume m3	0.00	0.00	2010.25	11380.08	0.00	0.00	12777.03	0.00	0.00	27220.76	53388.13
12	1038	<i>Rhododendron aeboreum</i>	Rhododendron	Number	82341	76662	56787	19875	17036	2839	2839	0	0	0	258380
				Volume m3	7740.04	22538.69	40205.07	26553.52	37087.47	9176.75	12777.03	0.00	0.00	0.00	156078.57
13	19	<i>Acer acuminatum</i>	Maple	Number	11357	5679	17036	11357	0	0	0	0	0	0	45429
				Volume m3	1328.81	1135.74	11925.23	14764.57	0.00	0.00	0.00	0.00	0.00	0.00	29154.35
14	965	<i>Prunus cornata</i>	Bird cherry	Number	5679	8518	2839	0	0	0	0	0	0	0	17036
				Volume m3	664.41	1703.60	1987.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4355.55
15	62	<i>Alnus nitida</i>	Kunish	Number	2839	0	0	0	0	0	0	0	0	0	2839
				Volume m3	266.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	266.90
16	433	<i>Eucalyptus spp.</i>	Safeda	Number	258380	107895	22715	5679	5679	0	0	0	0	0	400347
				Volume m2	24287.72	31721.12	16082.03	7586.72	12362.49	0.00	0.00	0.00	0.00	0.00	92040.07
17	992	<i>Pyrus pasia</i>	Kainth	Number	2839	8518	0	0	0	0	0	0	0	0	11357
				Volume m3	266.90	2504.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2771.20
18	1047	<i>Robiniapseudocacia</i>	Robinia	Number	25554	0	0	0	0	0	0	0	0	0	25554
				Volume m4	2402.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2402.08
19	2000	<i>Identified and Uncoded Tree</i>	Other B/L	Number	56787	48269	42590	8518	2839	2839	0	0	0	2839	164682
				Volume m3	5337.96	14191.03	30153.80	11380.08	6181.24	9176.75	0.00	0.00	0.00	27220.76	103641.62
			G Total	Number	3725215	2944396	1851250	993769	542314	437258	249862	124931	62465	76662	11008124
				Volume m3	253669.55	484082.06	991370.05	1409031.40	1433148.77	1873885.45	1492286.56	895857.46	527501.26	687046.66	10047879.20

5.7 Age Classes:

Almost all the age classes are present in the working circle. In some compartments, the younger classes are much less except in a few compartments where all the age classes are represented.

5.8 Comparative Statement:

As discussed in the Para No. 4.7 above, sampled enumeration has been carried out on the grid system basis in the sample ID's (Plots) of the size 0.1 hac. each. The whole area of the Anni Forest Division was divided into grids and total 274 No's of sample were taken. Out of these 169No.s of sample plots pertaining to this working Circle were enumerated down to 10 cm dbh and analyzed. Thereafter, the growing stocks have been assessed / extrapolated as given in the *Appendix No.XIII*.

The abstract showing the growing stock of PB-I, PB-II, PB-III , PB-IV & total in the plan under revision is given and tabulated in *Appendix No.XIII*. However, no enumeration has been carried out in this working circle under Negi's working plan. Therefore, the comparative statement in respect of growing stock is not given. However, the Range wise comparative statement under this working circle in Negi's working Plan and current plan is given table No. 5.3 & 5.4 respectively.

Table No. 5.3

Name of Range	RF	DPF I Class	DPF II Class	III Class forests (UPF)	Total in Ha.
Arsu	1619.57	1607.03	10622.60	0	13849.2
Chowai	0	139.22	4307.57	0	4446.79
Nither	0	918.63	357.74	0	1276.37
Total	1619.57	2664.88	15287.91	0	19572.36

Table No. 5.4

Name of Range	RF	DPF I Class	DPF II Class	III Class forests (UPF)	Total in Ha.
Arsu	1619.57	1607.03	10622.60	9732.72	23581.92
Chowai	0	139.22	4307.57	9198.94	13645.73
Nither	0	918.63	357.74	9480.84	10757.21
Total	1619.57	2664.88	15287.91	28412.50	47984.86

5.9 Silvicultural System:

Since the object of management is to conserve the existing forests and no commercial fellings are envisaged. Therefore, no silvicultural system is prescribed only the demand of local right holders will met with that too, from the dead and dying trees as per Himachal Pradesh Forest (Timber Distribution to the Right holders) amendment rules, 2016. Under no circumstances the commercial felling will be carried out for any purpose. Only salvage marking will be carried out as and when required.

5.10 Choice of Species:

Species best suited to the area will be preferred.

5.11 Rotation Period:

The forest allotted to this Working Circle will have physical rotation only.

5.12 Calculation of Yield:

As no commercial fellings are proposed, therefore, no yield is prescribed. Only salvage marking will be carried out to extract the dead and uprooted trees. All these fellings will be recorded in the CH Files.

5.13 Sequence of Fellings:

No sequence of fellings is prescribed as the area is to be given rest and protection.

5.14 Methods of Treatment:

The chief value to these forests is in protection of hill sides against the denudation and soil erosion and hence these forests will be strictly protected and preserved. The demand of right holders, where there is no other forests in the vicinity will be met with strictly in accordance with the selection principles and as per recorded settlement rights and as per amended Timber Distribution Rules 2016 given in the **Notification No. FFE-B-A (3) 4/2015 Dated: Shimla -2, the 26 February, 2016 regarding Himachal Pradesh Forest (Timber Distribution to the Right Holders) Amendment rules, 2016. (See Appendix No. XXIII).**

5.15 Plantation Programme:

The chief value to these forests lies in their protective cover against the denudation and soil erosion of hills. Demands of the right holders will be met only on silvicultural consideration and should conform to selection marking. All the sizable cultural blanks will be planted with suitable species. The area which requires closure, soil conservation work and Afforestation etc. the detail has been given in the Plantation (Overlapping) Working Circle. The plantation areas will remain closed for minimum period of 10 years or more and the area so closed shall be got notified well in time. The inspection path in the plantation area which is normally constructed 60 cms wide should be constructed at least one meter wide which will act as fire line and also to protect the plantation. The path should be constructed in such a way that it divides the whole plantation in four or five equal parts. The plantations and closures of the past have suffered on account of poor people's participation, but that concept must now change with the advent joint participation forest management. Only those areas should be taken up where the people readily agree participate and protect. In these areas, motivational and organizational skills are of great importance, which is also a pre-requisite before taking an area for the plantation activities.

5.16 Other Miscellaneous Regulations:

5.16.1 Fire Protection: The whole Working Circle will be under strict vigil against fire hazard. All the old and new plantations area will be strictly fire protected from fire. All the fire lines should be cleared and fire watcher should be engaged in the fire prone areas. Besides this maintaining cordial relations with the local people and educating them properly with regard to importance of forest conservation, rights and duties and social obligation as enshrined in Article 51 A(g) of the constitution of India read with Section 79 of the Indian Forest Act, 1927.

5.16.2 Closures: All areas taken up for planting should be closed to grazing, lopping, grass cutting etc. and shall duly notified for closure under Section 30 (b) of IFA, 1927, for a period of 10-15 years.

5.16.3 Grazing: All plantations areas shall remain closed for grazing for 10 to 15 years period depending upon the progress or success of plantation. The closure should be effective and for the minimum possible time, so that least hardships is experienced by right holders. However, depending upon the progress of the young crop, particular area may be thrown open to grazing even before the period of closure notification is expired. Most of the areas of this working circle are over grazed and following suggestions are made to control and regulate grazing in the forests of this working circle.

- i) All the alpine pastures are required to be surveyed for determining their carrying capacity.
- ii) No increase should be allowed in the number of migratory sheep and goats which visit these areas during summer.
- iii) The check on the number of cattle which the local people cane should be provided and number of cattle allowed to graze free of charge should be fixed for different sizes of holdings.
- vii) The people should be encouraged to keep stallfed cattle of good breed
- viii) The areas, which are seriously suffering from over grazing, should be closed to grazing under the scheme of rotational closure.
- ix) Grass cutting should be allowed from these areas in the month of October when the seed has been shed.
- x) Suitable legumes should be introduced in the pasture land.

The following rules should be enforced for lopping

- a) The conifers and valuable broad leaved species like Maple, Walnut, Ash etc. should not allowed to be lopped.
- b) The trees below three meters in height will not be lopped.
- c) The lopping will be restricted only to the lower to 2/3rd portion of its total height.
- d) The branches more than 8 cm. in dia meter will nut be cut.

5.16.4 Grass cutting: No grass cutting shall be allowed except under strict supervision of the forest guard under MGNREGA Scheme etc. It will also better if Panchayats are associated for the purpose. Removal of grass reduces competition and also mortality due to overhead shade.

5.16.5 Lopping: Trees standing in the plantation areas shall remain prohibited for lopping during the closure period and necessary notification shall be got issued under Section 30 (b) of the Indian Forest Act, 1927 to avoid any litigation.

5.16.6 Right Holder's Demand: The requirements of right holders will be met from the forests in which such right has been recorded in settlement. But it should be bare minimum so that the forest crop is not damaged and soil conservation problem is not created. The marking of trees to the right holders, if permitted, should be in accordance with the silvicultural principle

CHAPTER VI

THE EUCALYPTUS (OVERLAPPING) WORKING CIRCLE

6.1 General Constitution:

This Working Circle includes all the I Class Demarcated Protected and III Class (Undermarked Protected Forests) which overlaps with Protection Working Circle and has been constituted to meet the increasing demand of fire wood, sawn timber, poles, extraction of essential oil, fence posts etc. This Working Circle includes predominantly Eucalyptus forests raised during 1960-1970 in the tract of this Division. The total area covered under this Working Circle is **10752 hac.**

6.2 General Character of Vegetation:

The Eucalyptus is the common low level tree found in the South-Eastern aspect of the tract and covers the area varying from 800 to 1500 m. It thus, overlaps the altitudinal zones of the entire lower conifer and is common companion of the Chir pine and low lying Broad Leaved species. The pure Eucalyptus plantation occurs in Shattaldhar, Brow in Arsu Range and Moin, Tadashaarea in Nither and Poeg, Lambidhar, Binan in Chowai Ranges.

The Eucalyptus plantation raised during the past is slowly encroaching upon the area of Chir Forests/plantation at places in Arsu, Chowai and Nither Ranges by its natural regeneration. Although the trees have not reached big diameter but is definitely covering the good chunk of forest land and is irregular in age. Its chief associates are *Chir pine*, *Litsaea umbrosa*, *Cedrela serreta* and Shisham. Slight admixture of Khair and *Dalbergia sisoo* also occurs along river side in the lower portion. The Eucalyptus forests are typically of selection type with almost all age classes well represented. In the forests, the regeneration is profuse and it is good coppicer as it recoups in 2 to 3 years by providing effective closure. There is generally good deal of shrubby undergrowth chiefly of *Berberis* spp., *Colebrookia oppositifolia*, *Prinsepia utilis*, *Rubus species*, *Dodonea viscosa* and *Adhatoda vesica* etc.

6.3 Special Objects of Management:

Apart from meeting the demand of local Right Holders for fuel wood, sawn timber, poles, and posts/Ballies for storing dry grasses, the special objects of managements of the forest allotted to this Working Circle are:

- (i) To protect and preserve the hill sides.
- (ii) To meet the local demand of people for fuel wood, small timber and posts/Ballies for storing dry grasses and transmission poles.
- (iii) To maintain and improve the stocking of these forests by effective closure for supply of fuel wood to the tribal areas.
- (iv) To improve the biological diversity of the area.
- (v) To obtain the maximum progressive sustained yield.
- (vi) To replace the Eucalyptus Plantation with more valuable species suitable to the locality in a phased manner.

6.4 Area Statement:

The total area of this Working Circle is **10752ha**. The range wise distribution of these forests is tabulated in table No. 6.1

Table No. 6.1

Name of Range	Area in Hac.				
	RFs	DPFs I Class	DPFs II Class	III Class Listed UPFs	Total
Arsu	0	0	0	3305.19	3305.19
Chowai	0	70.01	0	1905.62	1975.63
Nither	0	0	0	5471.2	5471.2
Total	0	70.01	0	10682.01	10752

The list of forests where Eucalyptus plantation has been raised during the past is given in table No. 6.2.

Table No. 6.2

Sr.No.	Name of Range	Name of Forest	Comptt. No.	Area in Ha.
1	Arsu	Bail	9	874.15
		Sisu	10	60.7
		Kathanda	12	186.15
		Randal	13	356.12
		Ralu	14	311.24
		Brow	15	121.12
		Mareli	17	67.77
		Kimcha	39	655.39
		Dharmot	43	194.24
		Sharshaya	47	244.88
		Jahalu	48	233.43
		Total		3305.19
2	Chowai	1/19 LAMBIDHAR	WHOLE	33.99
		1/20 DAGRUT	WHOLE	36.02
		UPF Shomar(Kashmal)	102	94.7
		UPF Bharai	103	133.54
		UPF Binan	134	287.33
		Mahul	135	339.93
		UPF Poeg	138	169.96
		UPF Roha	139	16.18
		UPF Runa	140	28.32
		UPF Matal	141	271.14

		UPF Olwa	143	299.46
		UPF Thog	148	145.68
		UPF NaiRopa	151	70.82
		UPF Kalow	153	48.56
			Total	1975.63
3	Nither	Tadasha	49	198.29
		Tihni	50	299.46
		Shush	51	477.53
		Ganchwa	52	341.94
		Katotha	53	299.46
		Bai	54	145.68
		Sarli	56	242.81
		Lunalot	57	404.68
		Sheug	59	230.67
		Thalin	61	242.81
		KhAnni	62	165.92
		Nore	63	343.98
		Jaral	64	319.7
		Ghatu	72	194.24
		DagehAnni	74	72.84
		Bashla	76	190.2
		Kalog	77	354.1
		Khatal	78	20.23
		Shanah	79	364.21
		Nither	84	218.58
		Kopardhar	85	107.93
		Moin	86	235.94
			Total	5471.2
			G.Total	10752.02

6.5 Blocks and Compartment:

No change in the existing compartments and sub compartments has been made.

6.6 Felling series:

There will be only One Felling series has been formed i.e. **Sutlej felling series**, conforming to the territorial jurisdiction of Anni Forest Division.

6.7 Analysis and valuation of the crop:

The crop is generally uneven aged. Admixture of other species also occurs. The common associates are *Chir pine*, *Litsaeaumbrosa*, *Cedrela serreta* & *Dalbergia sissoo* etc. The associates occurs either in light admixture or occasionally may form the under storey.

6.7.1 Stock map: -The stock maps on 4"=1 Miles scale, have been prepared for all the forests separately.

6.7.2 Density: The crown density of each compartment has been estimated ocularly and has been recorded in respective compartments history files. The average density of the crop varies from 0.4 to 0.6

6.7.3 Site quality: The site quality of the crop varies from place to place overall quality conform to II/III of the FRI quality classes. The site quality of individual compartments/ sub-compartment has been indicated in the compartment history files.

6.7.4 Age classes: Since the forests are of typically of selection type and generally lower to middle age classes are well represented.

6.7.5 Enumerations: No separate enumeration has been carried out in the compartments.

6.8 Silvicultural System:

No Silvicultural System is prescribed; however, the old matured Eucalyptus trees are to be felled on selection principle so as to replace the old Eucalyptus raised plantation with more valuable species like Chir pine, Shisham and Khair etc.

6.9 Choice of Species:

Chir pine, Shisham and Khair are the most predominant species and will naturally be favoured in the matter of regeneration and tending operations. However, the species best suited to the area will be preferred.

6.10 Rotation Period:

There is no necessity to fix any rotation and as such no rotation is prescribed. However, for meeting the requirement of fuel wood, short rotation of seven years is generally prescribed. However to meet the requirement of transmission poles, medium rotation of 15 years is suggested and prescribed.

6.11 Exploitable Diameter:

The Eucalyptus is fast growing specie and coppice fast. However, the exploitable diameter will depend the purpose for which the specie is required to be used.

6.12 Felling cycle:

The felling cycle of 10 years corresponding to the period of plan will be adopted.

6.13 Calculation of Yield:

The yield is regulated by area. Since the Eucalyptus is planted and there is no ban in it's felling. However the trees removed during the course of the plan shall be recorded in the control forms for the purpose of record. Salvage removal of 55 cum of Eucalyptus tree will be taken as equivalent to one Ha. of yield.

6.14 Method of executing the Felling:

The following general principles are however laid down for guidance of marking officer:

- (i) Dead, diseased and definitely dying trees will be marked.

- (ii) Except for the removal of dead and definitely dying trees, in all the markings, silvicultural availability will have an overriding priority. A tree will be considered silviculturally available when
 - (a) Its removal does not create a permanent gap in the canopy.
 - (b) The well established saplings of valuable specie to be preferred for planting in the area.
- (v) Selection trees standing over and interfering with the growth of younger trees or regeneration will be removed.
- (vi) Valuable Broad leaved species will be encouraged by the removal of inferior and less valuable species.
- (vii) On steep ground, on the banks of nalla and in the open area, fellings should invariably be lighter than in better places.

6.15 Table of Felling:

Only selection felling /salvage removal are prescribed.

6.16 Subsidiary Silvicultural Operations, Cleaning and Thinning:

Following subsidiary silvicultural operations are prescribed:-

6.16.1 Subsidiary Silvicultural Operations

These will be carried out in the year following the main fellings and will consist of:-

- (i) Coppicing of all damaged poles and saplings flush with the ground, for getting better coppice shoots.
- (ii) Tending of young regeneration of Chir pine and other valuable Broad leaved species by freeing these from bushes and other inferior species.
- (iii) Cleaning and unsalable thinning in thickets of Eucalyptus saplings.
- (iv) Cutting of climbers wherever necessary.
- (v) Felling and conversion refuse shall be collected and dumped in nallas and depressions unsuitable for planting.
- (vi) Lopping of inferior B/L species interfering with the young saplings poles of valuable species will be done.
- (vii) Weeding and cleaning should be carried out to help regeneration of valuable species to come up and grow.

6.17 Artificial Regeneration:

The felled and blank areas, in the compartments allotted to this Working Circle will be artificially regenerated during the period of the plan. To achieve this objective the detail planting programme has been given in Plantation (overlapping) Working Circle, Chapter-VII, Part-II.

6.18 Planting Programme:

The planting programme has been given in the plantation (overlapping) Working Circle.

6.19 Bush Cutting/Weeding:

Bush cutting is carried out lightly so as to afford seed bed as well as protection against drought to the young seedlings. Weeding is an essential and most important activity that young regeneration should be properly weeded by freeing it from thick grasses and over head shade of bushes. The cut material should be disposed of by using it in interlacing of barbed wire fencing or by burring it safely outside the plantation area to reduce fire hazards.

6.20 Other Regulations:

6.20.1 Fire Protection: The whole Working Circle will be under strict vigil against fire hazard. The floor should be kept clean of inflammable material such as debris, unwanted bushes, weeds and grass etc and adequate fire watcher should be employed.

6.20.2 Closures: The areas taken up for protective and improvement works shall be closed for a period of 15 years or more depending upon the status of regeneration. Normally this period is 30 years, Govt. notification for such closure should be got issued under Section 30 (b) of Indian Forest Act, 1927.

6.20.3 Grazing: The area closed for planting will be strictly protected from grazing. However, the grazing rights of the right holders as admitted in the settlement report will be allowed strictly for rotational grazing only. The other area to be taken up for reclamation, soil conservation purposes shall also be closed to grazing till artificial regeneration is fully established.

6.20.4 Lopping: No lopping is prescribed.

6.20.5 Right Holder's Demand: Demand of right holders for small timber, poles etc. will be regulated from the Forests as per settlement rights subject to silviculture availability. The marking of trees to the right holders should be in accordance with the silvicultural principle and all the trees marked to the right holders shall be counted and mentioned in the Control Forms.

MANDATORY WORKING CIRCLES

CHAPTER VII

THE PLANTATION (OVERLAPPING) WORKING CIRCLE

7.1 General Constitution:

This Working Circle comprises of such Reserve Forests, I & II Class Demarcated and III Class Undemarcated Protected Forests including culturable Govt. waste land which are under stock or devoid of tree growth or blank areas or have young plantation or crop which still need protection and are suitable for planting of ecologically and economically important species. The main objective of forest management is no more managing the forests for economical timber harvests but has been change to environmental and social factors. The Forest Policy enunciates that at least 60 % area should be under forest cover. To achieve this target, a massive plantation drive was launched in the state which has yielded satisfactory results particularly in the presence of very heavy population and livestock pressure and huge infrastructure needs. Only such areas will be taken which have site factor favourable for raising plantations, closure is possible, in view of the fact that not more than one third area of a forest can be closed at a time under the permission of settlement of rights under **section 29 (b) of Indian Forest Act, 1927**. Human population has increased manifold and is further increasing day by day. Their requirements for fuel-wood, fodder, timber, NTFP and water has also increased manifold thereby putting pressure on natural forest resources. Therefore, the areas adjacent to village habitations where the species of local requirement of fodder and fuel can be raised in sustainable manner through JFM (participatory practices). The depleted scrub forests are also included in this Working Circle. Focus will be on restoring the species composition from timber centric to other useful species for fuel, fodder and NTFP etc.

7.2 General Character of Vegetation:

This Working Circle extends over several types of forests starting from low level Khair-Sissu seral type of dry tropical forest along river banks to upper Oak coniferous forests, and extending up to Alpine Scrub Forests. The general description of the crop has been described in Chapter II of Part I of the Working Plan under revision. The detail descriptions are also given in the respective compartment history files also. The forests of this Working Circle are located in different altitudinal zones and therefore, there is marked variation in the vegetation. No specific forests are allotted to this working circle but the areas which are devoid of or have very scanty vegetation, areas which are infested by weeds, all areas along road side where strip plantation can be done to enhance the aesthetic beauty of the area are included to constitute this working circle. Unrestricted grazing, browsing, lopping and repeated fires have reduced these areas to the present deplorable state.

The old Eucalyptus plantations raised during the past in the early eighties & seventies are in the process of deterioration and needs scientific management. In order to replace them with more economical species suitable to the localities.

7.3 Special Objects of Management:

The special objects of managements of the forest allotted to this Working Circle are:

- (i) To rehabilitate the degraded treeless area and poorly stocked areas, with economic and ecological tree species to meet the demand of the local people for fodder, fuel and timber etc. in the vicinity of these forests.

- (ii) To manage the degraded, sparsely stocked and blank forests on scientific basis to increase the area under forest cover, thereby, reducing the pressure on natural forests.
- (iii) To relocate the barren areas to preserve the soil in situ and conserve the soil moisture in the watershed/catchment areas.
- (iv) To rehabilitate degraded areas by planting fodder trees and high yielding varieties of grasses through participatory management practices and to involve local people in planning, execution and management of plantation areas near habitation so as to have better survival rate and to develop sense of ownership and belongingness amongst the villagers.
- (v) To develop and augment forest resources of area in order to meet the demand of the locals for firewood, fodder and timber & NTFPs.
- (vi) To replace gradually the inferior weed infested forests with more valuable commercial as well as species most suited to local people.
- (vii) To restock the blanks of roadside strips with species of aesthetic importance.
- (viii) To protect and nurse the existing plantations and natural young growth under a systematic regime of cleaning and thinning etc.
- (viii) To manage and restock the old Eucalyptus plantation with more valuable species in a phased manner.

7.4 Area Statement:

No specific forest area has been allotted to this working circle. However, the Forest areas allotted to other working circle of the plan under revision, which requires Afforestation is tabulated in table no 6.2 under the plantation programme. The list of existing Eucalyptus plantation forest given in **table No.6.2 of Chapter No.VI** is also included in this Working Circle and range wise distribution of area under Eucalyptus plantation is also included in the plantation programme. The areas which require replacement / Afforestation with valuable species under Eucalyptus Overlapping Working Circles also given in the plantation programme.

7.5 Blocks and Compartment:

No change in the existing compartments and sub compartments has been made in the plan under revision.

7.6 Plantation series:

There will be only one plantation series, conforming to the territorial jurisdiction of Anni Forest Division.

7.7 Analysis and valuation of the crop:

In order to cover the entire plantable area of this division during the plan period, annual plantation program has been laid down in this Working Circle. Emphasis, however, should be on proper selection of suitable species of the area, combination of species, reduction of mortality etc.

7.7.1 Stock map: The stock maps on 4"=1 Miles scale, have been prepared for all the forests separately and placed in the respective compartment history files of the forests.

7.7.2 Density: The areas being bare grassy land or with scattered and stunted tree growth, working out of density is not feasible. However, the crown density of each compartment wherever necessary, has been estimated ocularly and has been recorded in respective compartment history files.

7.7.3 Site quality: Working out of the site quality is not feasible since the area being bare grassy land or with scattered and stunted tree growth. However, the site quality of the crop varies from place to place but overall quality conforms to II/III of the FRI quality classes. The site quality of individual compartment/ sub compartment has been indicated in the compartment history files.

7.7.4 Enumerations: No enumerations have been carried out as it was not required in these areas. However, the description has been written up for each area showing the present state of the areas.

7.8 Silvicultural System:

The new plantations will be raised artificially. The choice of silvicultural system, therefore, at the stage does not arise. As the main object is to raise plantations of suitable species, therefore, no silvicultural system is prescribed. The plantation will be raised by artificial planting or sowing. However, as and when plantations are established, areas as per crop composition will be allotted to respective Working Circles in next Working Plans.

7.9 Choice of Species:

The choice of species for raising plantation will mostly be governed by the site factors. The choice of species depends on various factors such as climatic, edaphic, topographic and biotic but surviving indigenous species give a clear indication of most suitable species. The correct choice of species would give productive and praise worthy results where as wrong choice of species always brings adverse publicity for the forester. In short, adequate care must be taken while selecting the species to be planted keeping in view the ecological land capability, terrain and the demands of the local people. The species to be planted altitude-wise are suggested as under. However, Divisional Forest Officer is at liberty to change or new species suitable to a particular site.

Table No.-7.1

Suggested list of species to be planted

Altitude	Species suggested for plantation
1	2
Up to 1000 meters	Shisham, Khair, Ritha, Toon, Bihul, siris, Khirk, Kachnar, Daru, Harar, Bahera, Amla
1000 to 1500 meters	Robinia, Chulli, Chil, Ailanthus, Bihul, Toon, Ritha, Kachnar, Willow, Leucaenia, Bamboo, Khair, Khirk, Kikker, Daru, Poplar, Mulberry
1500 to 2500 metres	Deodar, kail, Walnut, Poplar, Willow, Robinia, Ban Oak, Horse Chestnut
2500 to 3000 metres	Silver Fir, Spruce, Maple, Walnut, Moru/Kharsu Oak, Bird Cherry, Ash, Poplar

7.10 Rotation Period:

There is no need for prescribing rotation at this stage. However, the different species will naturally be worked out under different rotations.

7.11 Exploitable Diameter:

No exploitable diameter is fixed at this stage.

7.12 Calculation of Yield:

Since blank grassy land, degraded forest and under stock areas have been prescribed for Afforestation, and therefore, no felling has been prescribed in this Working Circle at this stage. Therefore, no yield has been prescribed.

7.13 Table of Planting:

The table below gives the plantation programme in these areas and is tabulated in table No. 7.2

Table No. 7.2

Year	Name of Range	Name of Forest	Comptt No.	Area of Comptt. (Ha.)	Working Circle wise area in Ha.					Total (in Ha.)
					D/KWC	F/SWC	CWC	PWC	Eucalypts Overlapping WC	
1	2	3	4	6	8	9	10	11	12	13
2020-21	Arsu	0	0	0	0	0	0	0	0	0
	Chowai	0	0	0	0	0	0	0	0	0
	Nither	0	0	0	0	0	0	0	0	0
			G.Total 2020-21	0	0	0	0	0	0	0
2021-22	Arsu	JUJUTH	R/3 C-I	58.27	5	0	0	0	0	5
		TIKKAR	1/1 C-Ib	106.43	0	0	0	5	0	5
		TIKKAR	1/1 C-IIb	248.08	0	0	0	5	0	5
		SHIKARWA	1/2 C-II	24.28	3	0	0	0	0	3
		TIKKAR	1/1 C-Ia	107.24	0	0	4	0	0	4
		KALEO	2/11 C-I	246.86	0	0	0	5	0	5
		Basawari	2	352.07	0	0	0	8	0	8
		Sarahan I	3	182.1	0	0	0	6	0	6
		Sarahan II	4	149.73	0	0	0	5	0	5
		Bramgarh	5	293.4	0	0	0	7	0	7
		Shalat	6	400.64	0	0	0	5	0	5
		Barna	7	157.83	0	0	0	6	0	6
		Bail	9	874.15	0	0	0	9	4	13
		Kathanda	12	186.15	0	0	0	7	5	12
		NishAnni	16	60.7	0	0	0	5	0	5
		Neger	30	198.3	0	0	0	8	0	8
		Brow	15	121.12	0	0	0	0	4	4
		Kimcha	39	655.39	0	0	0	0	5	5
		Dharmot	43	194.24	0	0	0	0	4	4
			Total		8	0	4	81	22	115
	Chowai	JARONU	R/6 Whole	13.35	3	0	0	0	0	3
		CHOTAR	1/30 C-V	97.13	0	0	0	5	0	5
		BAMAUR JADRI	2/22 Whole	418.86	0	0	0	0	0	0

		KHANORA	2/23 C-II	125.86	0	0	0	5	0	5
		KOTANAL	2/25 WHOLE	178.47	0	0	0	4	0	4
		MANDRIBIL DRAD	2/33 C-II	1181.3	0	0	0	6	0	6
		Phanauti	89	182.11	0	0	0	6	0	6
		Barino	90	80.93	0	0	0	5	0	5
		Salut	91	291.37	0	0	0	6	0	6
		Karshalabag	94	68.8	0	0	0	5	0	5
		Kanshel	95	105.22	0	0	0	5	0	5
		Kultha	96	79.32	0	0	0	6	0	6
		Kamand	97	46.53	0	0	0	5	0	5
		Chapal	98	165.92	0	0	0	5	0	5
		Uthkhaner	104	82.96	0	0	0	4	0	4
		Pharauti	115	101.17	0	0	0	5	0	5
		Bala	131	30.35	0	0	0	5	0	5
		Haripur	142	202.34	0	0	0	6	0	6
				Total	3	0	0	83	0	86
	Nither	LOTKAYAION	1/15 C-II	22.26	3	0	0	0	0	3
		Shush	109	74.86	0	0	0	5	0	5
		LOHAR	1/8 C-I	133.55	0	0	0	5	0	5
		LOHAR	1/8 C-II	295.42	0	0	0	6	0	6
		BIJURI	1/9 C-II	271.14	0	0	0	4	0	4
		BASHAD	1/10 C-II	127.88	0	0	0	6	0	6
		DAMAN	2/20 C-II	122.21	0	0	0	5	0	5
		PATAL	2/21 WHOLE	235.53	0	0	0	6	0	6
		Shush	51	477.53	0	0	0	6	0	6
		Ganchwa	52	341.94	0	0	0	5	0	5
		Katoha	53	299.46	0	0	0	5	0	5
		Bai	54	145.68	0	0	0	6	0	6
		Soidhar	55	137.59	0	0	0	5	0	5
		Sarli	56	242.81	0	0	0	4	0	4
		Lunalot	57	404.68	0	0	0	6	0	6
		DagehAnni	74	72.84	0	0	0	6	0	6
				Total	3	0	0	80	0	83
		G.Total of 2021-22			14	0	4	244	22	284
2022-23	Arsu	JUJUTH	R/3 C-IIIb	32.37	0	6	0	0	0	6
		TIKKAR	1/1 C-IIa	180.49	0	0	3	0	0	3
		SIARUNAL	2/3 C-II	38.44	0	0	4	0	0	4
		JIA	2/2 WHOLE	156.62	0	0	0	5	0	5
		KALEO	2/11 C-II	242.81	0	0	0	4	0	4
		Sarahan I	3	182.1	0	0	0	7	0	7
		Sarahan II	4	149.73	0	0	0	7	0	7
		Bramgarh	5	293.4	0	0	0	6	0	6
		Randal	13	356.12	0	0	0	6	3	9
		Ralu	14	311.24	0	0	0	4	5	9
		Kasholi	18	117.36	0	0	0	6	0	6
		Pankwa	19	234.7	0	0	0	5	0	5
		Deothan	23	84.98	0	0	0	6	0	6
		Kothi	28	117.36	0	0	0	5	0	5
		Kindla	38	305.53	0	0	0	5	0	5
		Sisu	10	60.7	0	0	0	0	5	5
		Mareli	17	67.77	0	0	0	0	4	4
		Jahalu	48	233.43	0	0	0	0	3	3
				Total	0	6	7	66	20	99
	Chowai	SATHABANDRI TRIJHAKAR	1/13 C-III	29.14	6	0	0	0	0	6
		CHOTAR	1/30 C-II	23.47	7	0	0	0	0	7
		PARKOTSHIL	1/26 C-Ib	29.14	0	0	3	0	0	3
		BAMAUR JADRI	2/22 Whole	418.86	0	0	0	5	0	5
		KHANORA	2/23 C-II	125.86	0	0	0	3	0	3
		KOTANAL	2/25 WHOLE	178.47	0	0	0	2	0	2

		Salut	91	291.37	0	0	0	5	0	5
		Karshalabag	94	68.8	0	0	0	6	0	6
		Shomar(Kashmal)	102	94.7	0	0	0	5	0	5
		Bharai	103	133.54	0	0	0	4	0	4
		Chajut	107	80.93	0	0	0	4	0	4
		Khadoran	108	80.01	0	0	0	5	0	5
		Pokhar	113	72.76	0	0	0	5	0	5
		Pharauti	115	101.17	0	0	0	5	0	5
		Patarna	116	52.6	0	0	0	5	0	5
		Mishta	127	64.75	0	0	0	5	0	5
				Total	13	0	3	59	0	75
	Nither	SHILLA	1/24 C-Ib	20.23	2	0	0	0	0	2
		GWAN	1/17 C-IV	29.54	0	0	3	0	0	3
		MARAHKOD	1/14 C-IVb	45.32	0	0	0	5	0	5
		SHILA	1/24 C-III	45.32	0	0	0	6	0	6
		Tadasha	49	198.29	0	0	0	5	0	5
		Tihni	50	299.46	0	0	0	4	0	4
		Shush	51	477.53	0	0	0	5	0	5
		Ganchwa	52	341.94	0	0	0	4	0	4
		Katoha	53	299.46	0	0	0	3	0	3
		Bai	54	145.68	0	0	0	4	0	4
		Lunalot	57	404.68	0	0	0	6	0	6
		Sunara	71	129.49	0	0	0	6	0	6
		Ghatu	72	194.24	0	0	0	5	0	5
		Kalog	77	354.1	0	0	0	5	0	5
		Shanah	79	364.21	0	0	0	6	0	6
				Total	2	0	3	64	0	69
		G.Total of 2022-23			15	6	13	189	20	243
2023-24	Arsu	SHIKARWA	1/2 C-II	24.28	5	0	0	0	0	5
		TIKKAR	1/1 C-Ib	106.43	0	0	0	6	0	6
		TIKKAR	1/1 C-IIb	248.08	0	0	0	8	0	8
		MANDROW	2/19 C-I	99.96	0	8	0	0	0	8
		GADA MAWA	2/6 WHOLE	35.61	0	0	3	0	0	3
		KALEO	2/11 C-I	246.86	0	0	0	4	0	4
		Basawari	2	352.07	0	0	0	10	0	10
		Sarahan I	3	182.1	0	0	0	5	0	5
		Sarahan II	4	149.73	0	0	0	8	0	8
		Barna	7	157.83	0	0	0	4	0	4
		Kathanda	12	186.15	0	0	0	5	3	8
		NishAnni	16	60.7	0	0	0	5	0	5
		Damauli	21	218.53		0	0	4	0	4
		Bail	9	874.15	0	0	0	0	5	5
		Kimcha	39	655.39	0	0	0	0	4	4
		Dharmot	43	194.24	0	0	0	0	5	5
				Total	5	8	3	59	17	92
	Chowai	SATHABANDRI TRIJHAKAR	1/13 C-IV	38.04	7	0	0	0	0	7
		KOTADHAR & RIACHATHACH	1/28 C-IIIa	12.54	5	0	0	0	0	5
		CHAJALA	1/29 C-I	48.56	0	7	0	0	0	7
		CHOTAR	1/30C-V	97.13	0	0	0	5	0	5
		KHANE0	2/26 WHOLE	406.72	0	0	0	0	0	0
		GOHAN	2/27 WHOLE	359.37	0	0	0	0	0	0
		Phanauti	89	182.11	0	0	0	4	0	4
		Barino	90	80.93	0	0	0	5	0	5
		Kanshel	95	105.22	0	0	0	5	0	5
		Kultha	96	79.32	0	0	0	6	0	6
		Uthkhaner	104	82.96	0	0	0	6	0	6
		Chajut	107	80.93	0	0	0	5	0	5
		Khadoran	108	80.01	0	0	0	4	0	4
		Patarna	116	52.6	0	0	0	5	0	5

		Sampal	128	97.12	0	0	0	5	0	5
		Olwa	143	299.46	0	0	0	6	0	6
				Total	12	7	0	56	0	75
	Nither	MARAKOD	1/14 C-III	54.23	0	8	0	0	0	8
		Shanah	79	364.21	0	0	0	0	5	5
		Nither	84	218.58	0	0	0	0	5	5
		LOHAR	C-I	133.55	0	0	0	5	0	5
		LOHAR	C-II	295.42	0	0	0	4	0	4
		BIJURI	1/9 C-II	271.14	0	0	0	5	0	5
		BASHAD	1/10 C-II	127.88	0	0	0	6	0	6
		DAMAN	2/20 C-II	122.21	0	0	0	5	0	5
		PATAL	2/21 WHOLE	235.53	0	0	0	4	0	4
		Tadasha	49	198.29	0	0	0	4	0	4
		Tihni	50	299.46	0	0	0	4	0	4
		Katoha	53	299.46	0	0	0	5	0	5
		Bai	54	145.68	0	0	0	4	0	4
		Sunara	71	129.49	0	0	0	6	0	6
		Ghatu	72	194.24	0	0	0	5	0	5
		DagehAnni	74	72.84	0	0	0	5	0	5
		GWAN	1/17 C-I	13.76	0	0	3	0	0	3
				Total	0	8	3	62	10	83
		G.Total of 2023-24			17	23	6	177	27	250
2024-25	Arsu	JUJUTH	R/3 C-1	58.27	8	0	0	0	0	8
		TIKKAR	1/1 C-Ia	107.24	0	0	3	0	0	3
		DRAD REUNS	1/4 WHOLE	540.67	0	0	0	7	0	7
		JIA	2/2 WHOLE	156.62	0	0	0	6	0	6
		KALEO	2/11 C-II	242.81	0	0	0	6	0	6
		KALEO	2/11 C-III	372.37	0	0	0	5	0	5
		Sarahan I	3	182.1	0	0	0	5	0	5
		Shalat	6	400.64	0	0	0	6	0	6
		Bail	9	874.15	0	0	0	6	0	6
		Randal	13	356.12	0	0	0	5	0	5
		Ralu	14	311.24	0	0	0	5	3	8
		Razauri	22	60.24	0	0	0	3	0	3
		Kothi	28	117.36	0	0	0	5	0	5
		Kharga	41	165.92	0	0	0	3	0	3
		Sisu	10	60.7	0	0	0	0	4	4
		Randal	13	356.12	0	0	0	0	3	3
		Brow	15	121.12	0	0	0	0	3	3
		Mareli	17	67.77	0	0	0	0	3	3
		Sharshaya	47	244.88	0	0	0	0	4	4
				Total	8	0	3	62	20	93
	Chowai	JARONU	R/6 Whole	13.35	5	0	0	0	0	5
		PARKOTSHIL	1/26 C-Ib	29.14	0	0	3	0	0	3
		DAGRUT	1/20 WHOLE	36.02	0	0	0	0	3	3
		LAMBIDHAR	1/19 WHOLE	33.99	0	0	0	0	4	4
		BAMAUR JADRI	2/22 Whole	418.86	0	0	0	6	0	6
		KHANORA	2/23 C-II	125.86	0	0	0	5	0	5
		KOTANAL	2/25 WHOLE	178.47	0	0	0	4	0	4
		MANDRIBIL DRAD	2/33 C-II	1181.3	0	0	0	6	0	6
		Salut	91	291.37	0	0	0	6	0	6
		Karshalabag	94	68.8	0	0	0	5	0	5
		Kamand	97	46.53	0	0	0	4	0	4
		Chapal	98	165.92	0	0	0	5	0	5
		Shomar(Kashmal)	102	94.7	0	0	0	6	0	6
		Bharai	103	133.54	0	0	0	5	0	5
		Haripur	142	202.34	0	0	0	3	0	3
		Olwa	143	299.46	0	0	0	5	0	5
		Thog	148	145.68	0	0	0	6	0	6

				Total	5	0	3	66	7	81
	Nither	LOTKAYAION	1/15 C-II	22.26	6	0	0	0	0	6
		Ganchwa	52	341.94	0	0	0	0	5	5
		Bai	54	145.68	0	0	0	0	6	6
		KhAnni	62	165.92	0	0	0	0	5	5
		Nore	63	343.98	0	0	0	0	6	6
		Jaral	64	319.7	0	0	0	0	2	2
		Ghatu	72	194.24	0	0	0	0	5	5
		MARAHKOD	1/14 C-IVb	45.32	0	0	0	5	0	5
		SHILA	1/24 C-III	45.32	0	0	0	6	0	6
		DAMAN	2/20 C-II	122.21	0	0	0	4	0	4
		PATAL	2/21 WHOLE	235.53	0	0	0	5	0	5
		Shush	51	477.53	0	0	0	4	0	4
		Ganchwa	52	341.94	0	0	0	5	0	5
		Soidhar	55	137.59	0	0	0	3	0	3
		Sarli	56	242.81	0	0	0	3	0	3
		Kalog	77	354.1	0	0	0	5	0	5
		Shanah	79	364.21	0	0	0	6	0	6
				Total	6	0	0	46	29	81
		G.Total of 2024-25			19	0	6	174	56	255
2025-26	Arsu	RAMGARH KANDI	1/3 C-I	33.99	5	0	0	0	0	5
		JUJUTH	R/3 C-IIIb	32.37	0	8	0	0	0	8
		SIARUNAL	2/3 C-II	38.44	0	0	3	0	0	3
		GADA MAWA	2/6 WHOLE	35.61	0	0	3	0	0	3
		TIKKAR	1/1 C-Ib	106.43	0	0	0	7	0	7
		TIKKAR	1/1 C-IIb	248.08	0	0	0	6	0	6
		Basawari	2	352.07	0	0	0	7	0	7
		Sarahan I	3	182.1	0	0	0	7	0	7
		Bramgarh	5	293.4	0	0	0	7	0	7
		Barna	7	157.83	0	0	0	5	0	5
		Kathanda	12	186.15	0	0	0	6	3	9
		Shil	29	283.28	0	0	0	3	0	3
		Kindla	38	305.53	0	0	0	7	0	7
		Kimcha	39	655.39	0	0	0	0	5	5
		Jahalu	48	233.43	0	0	0	0	4	4
				Total	5	8	6	55	12	86
	Chowai	SATHABANDRI TRIJHAKAR	1/13 C-III	29.14	5	0	0	0	0	5
		Shomar(Kashmal)	102	94.7	0	0	0	0	5	5
		UPF Olwa	143	299.46	0	0	0	0	5	5
		KHANEO	2/26 WHOLE	406.72	0	0	0	4	0	4
		GOHAN	2/27 WHOLE	359.37	0	0	0	5	0	5
		Phanauti	89	182.11	0	0	0	5	0	5
		Barino	90	80.93	0	0	0	4	0	4
		Salut	91	291.37	0	0	0	5	0	5
		Kanshel	95	105.22	0	0	0	6	0	6
		Kultha	96	79.32	0	0	0	5	0	5
		Shomar(Kashmal)	102	94.7	0	0	0	5	0	5
		Bharai	103	133.54	0	0	0	6	0	6
		Sampal	128	97.12	0	0	0	5	0	5
		Haripur	142	202.34	0	0	0	4	0	4
		Olwa	143	299.46	0	0	0	6	0	6
		CHOTAR	1/30 C-II	23.47	5	0	0	0	0	5
				Total	10	0	0	60	10	80
	Nither	SHILLA	1/24 C-Ib	20.23	3	0		0	0	3
		GWAN	1/17 C-IV	29.54	0	0	3	0	0	3
		Tadasha	49	198.29	0	0	0	0	5	5
		Shush	51	477.53	0	0	0	0	5	5
		Ganchwa	52	341.94	0	0	0	0	6	6
		KhAnni	62	165.92	0	0	0	0	4	4

		Nore	63	343.98	0	0	0	0	5	5
		DagehAnni	74	72.84	0	0	0	0	5	5
		Bashla	76	190.2	0	0	0	0	4	4
		Kalog	77	354.1	0	0	0	0	3	3
		Kopardhar	85	107.93	0	0	0	0	4	4
		Moin	86	235.94	0	0	0	0	2	2
		LOHAR	C-I	133.55	0	0	0	4	0	4
		LOHAR	C-II	295.42	0	0	0	5	0	5
		BIJURI	1/9 C-II	271.14	0	0	0	5	0	5
		BASHAD	1/10 C-II	127.88	0	0	0	6	0	6
		Tadasha	49	198.29	0	0	0	4	0	4
		Tihni	50	299.46	0	0	0	5	0	5
		Lunalot	57	404.68	0	0	0	6	0	6
			Total		3	0	3	35	43	84
		G.Total of 2025-26			18	8	9	150	65	250
2026-27	Arsu	RAMGARH KANDI	1/3 C-IV	35.61	6	0	0	0	0	6
		MANDROW	2/19 C-I	99.96	0	8		0	0	8
		TIKKAR	1/1 C-IIa	180.49	0	0	3	0	0	3
		DRAD REUNS	1/4 WHOLE	540.67	0	0	0	6	0	6
		JIA	2/2 WHOLE	156.62	0	0	0	8	0	8
		KALEO	2/11 C-II	242.81	0	0	0	5	0	5
		KALEO	2/11 C-III	372.37	0	0	0	5	0	5
		Shalat	6	400.64	0	0	0	7	4	11
		Bail	9	874.15	0	0	0	8	0	8
		Randal	13	356.12	0	0	0	7	0	7
		Ralu	14	311.24	0	0	0	7	3	10
		Brow	15	121.12	0	0	0	0	4	4
		Sharshaya	47	244.88	0	0	0	0	3	3
			Total		6	8	3	53	14	84
	Chowai	SATHABANDRI TRIJHAKAR	1/13 C-IV	38.04	5	0	0	0	0	5
		DAGRUT	1/20 WHOLE	36.02	0	0	0	0	4	4
		Mahul	135	339.93	0	0	0	0	5	5
		UPF Matal	141	271.14	0	0	0	0	5	5
		BAMAUR JADRI	2/22 Whole	418.86	0	0	0	5	0	5
		Chajut	107	80.93	0	0	0	4	0	4
		Khadoran	108	80.01	0	0	0	5	0	5
		Olwa	143	299.46	0	0	0	6	0	6
		Thog	148	145.68	0	0	0	5	0	5
		NaiRopa	151	70.82	0	0	0	5	0	5
		Tarala	159	84.98	0	0	0	5	0	5
		CHAJALA	1/29 C-I	48.56	0	8	0	0	0	8
			Total		5	8	0	35	14	62
	Nither	MARAKOD	1/14 C-III	54.23	0	8	0	0	0	8
		GWAN	1/17 C-I	13.76	0	0	2	0	0	2
		Tadasha	49	198.29	0	0	0	0	5	5
		Tihni	50	299.46	0	0	0	0	5	5
		Shush	51	477.53	0	0	0	0	0	0
		Katotha	53	299.46	0	0	0	0	6	6
		Bai	54	145.68	0	0	0	0	5	5
		DagehAnni	74	72.84	0	0	0	0	5	5
		Bashla	76	190.2	0	0	0	0	4	4
		Kalog	77	354.1	0	0	0	0	4	4
		MARAHKOD	1/14 C-IVb	45.32	0	0	0	4	0	4
		SHILA	1/24 C-III	45.32	0	0	0	6	0	6
		DAMAN	2/20 C-II	122.21	0	0	0	5	0	5
		PATAL	2/21 WHOLE	235.53	0	0	0	4	0	4
		Soidhar	55	137.59	0	0	0	5	0	5
		Sarli	56	242.81	0	0	0	4	0	4
			Total		0	8	2	28	34	72

		G.Total of 2026-27			11	24	5	116	62	218
2027-28	Arsu	JUJUTH	R/3 C-1	58.27	7	0	0	0	0	7
		TIKKAR	1/1 C-Ib	106.43	0	0	0	7	0	7
		TIKKAR	1/1 C-Ia	107.24	0	0	3	0	0	3
		GADA MAWA	2/6 WHOLE	35.61	0	0	3	0	0	3
		TIKKAR	1/1 C-IIb	248.08	0	0	0	6	0	6
		KALEO	2/11 C-I	246.86	0	0	0	6	0	6
		Bramgarh	5	293.4	0	0	0	5	0	5
		Kathanda	12	186.15	0	0	0	7	0	7
		Deothan	23	84.98	0	0	0	4	0	4
		Shil	29	283.28	0	0	0	3	0	3
		Neger	30	198.3	0	0	0	7	0	7
		Kushua	36	186.15	0	0	0	5	0	5
		Kharga	41	165.92	0	0	0	3	0	3
		Dharmot	43	194.24	0	0	0	0	3	3
		Jahalu	48	233.43	0	0	0	0	4	4
				Total	7	0	6	53	7	73
	Chowai	PALEINICHLOON	1/36 WHOLE	123.43	0	0	3	0	0	3
		LAMBIDHAR	1/19 WHOLE	33.99	0	0	0	0	3	3
		Shomar(Kashmal)	102	94.7	0	0	0	0	5	5
		KHANE0	2/26 WHOLE	406.72	0	0	0	5	0	5
		GOHAN	2/27 WHOLE	359.37	0	0	0	4	0	4
		MANDRIBIL DRAD	2/33 C-II	1181.3	0	0	0	5	0	5
		Thog	148	145.68	0	0	0	4	0	4
		NaiRopa	151	70.82	0	0	0	5	0	5
		Tarala	159	84.98	0	0	0	5	0	5
		Deem	164	93.07	0	0	0	5	0	5
				Total	0	0	3	33	8	44
	Nither	Shush	51	477.53	0	0	0	0	6	6
		Ganchwa	52	341.94	0	0	0	0	5	5
		Katoha	53	299.46	0	0	0	0	6	6
		Jaral	64	319.7	0	0	0	0	5	5
		Ghatu	72	194.24	0	0	0	0	4	4
		Shush	51	477.53	0	0	0	6	0	6
		Ganchwa	52	341.94	0	0	0	5	0	5
		Katoha	53	299.46	0	0	0	4	0	4
		Bai	54	145.68	0	0	0	5	0	5
		Lunalot	57	404.68	0	0	0	6	0	6
		Sunara	71	129.49	0	0	0	5	0	5
		Ghatu	72	194.24	0	0	0	6	0	6
		DagehAnni	74	72.84	0	0	0	5	0	5
					0	0	0	42	26	68
		G.Total of 2027-28			7	0	9	128	41	185
2028-29	Arsu	RAMGARH KANDI	1/3 C-I	33.99	6	0	0		0	6
		DRAD REUNS	1/4 WHOLE	540.67	0	0	0	5	0	5
		Shalat	6	400.64	0	0	0	9	0	9
		Bama	7	157.83	0	0	0	4	0	4
		Bail	9	874.15	0	0	0	7	0	7
		Ralu	14	311.24	0	0	0	3	0	3
		Deothan	23	84.98	0	0	0	3	0	3
		Pakora	26	283.28	0	0	0	6	0	6
		Tharua	27	99.14	0	0	0	3	0	3
		Kushua	36	186.15	0	0	0	5	0	5
		Tadasha	49	198.29	0	0	0	0	6	6
		Sharshaya	47	244.88	0	0	0	0	4	4
					6	0	0	45	10	61

	Chowai	CHOTAR	1/30 C-Iva	45.32	3	0	0	0	0	3
		LAMBIDHAR	1/19 WHOLE	33.99	0	0	0	0	3	3
		Mahul	135	339.93	0	0	0	0	5	5
		UPF Olwa	143	299.46	0	0	0	0	6	6
		UPF Matal	141	271.14	0	0	0	0	6	6
		Thog	148	145.68	0	0	0	5	0	5
		Tarala	159	84.98	0	0	0	6	0	6
		Deem	164	93.07	0	0	0	5	0	5
				Total	3	0	0	16	20	39
	Nither	Tihni	50	299.46	0	0	0	0	4	4
		KhAnni	62	165.92	0	0	0	0	5	5
		Nore	63	343.98	0	0	0	0	4	4
		Jaral	64	319.7	0	0	0	0	5	5
		Ghatu	72	194.24	0	0	0	0	4	4
		Shanah	79	364.21	0	0	0	0	5	5
		Nither	84	218.58	0	0	0	0	5	5
		Kopardhar	85	107.93	0	0	0	0	2	2
		Moin	86	235.94	0	0	0	0	3	3
		Shush	51	477.53	0	0	0	5	0	5
		Ganchwa	52	341.94	0	0	0	6	0	6
		Kalog	77	354.1	0	0	0	6	0	6
		Shanah	79	364.21	0	0	0	5	0	5
				Total	0	0	0	22	37	59
		G.Total of 2028-29			9	0	0	83	67	159
2029-30	Arsu	RAMGARH KANDI	1/3 C-IV	35.61	8	0	0	0	0	8
		JUJUTH	R/3 C-IIIb	32.37	0	8	0	0	0	8
		TIKKAR	1/1 C-IIa	180.49	0	0	3	0	0	3
		KALEO	2/11 C-III	372.37	0	0	0	6	0	6
		GADA MAWA	2/6 WHOLE	35.61	0	0	3		0	3
		Bail	9	874.15	0	0	0	4	0	4
		Pakora	26	283.28	0	0	0	4	0	4
		Shil	29	283.28	0	0	0	4	0	4
		Kindla	38	305.53	0	0	0	4	0	4
		Tharua	27	99.14	0	0	0	2	0	2
		Kharga	41	165.92	0	0	0	4	0	4
		Dharmot	43	194.24	0	0	0	0	3	3
		Sharshaya	47	244.88	0	0	0	0	3	3
		Jahalu	48	233.43	0	0	0	0	3	3
				Total	8	8	6	28	9	59
	Chowai	KUT	1/11 C-Ia	36.42	10	0	0	0	0	10
		CHOTAR	1/30 C-Iva	45.32	5	0	0	0	0	5
		PALEINICHLOON	1/36 WHOLE	123.43	0	0	3	0	0	3
		DAGRUT	1/20 WHOLE	36.02	0	0	0	0	5	5
		Mahul	135	339.93	0	0	0	0	5	5
		UPF Olwa	143	299.46	0	0	0	0	7	7
		UPF Matal	141	271.14	0	0	0	0	7	7
					0	0	0	4	0	4
		MANDRIBIL DRAD	2/33 C-II	1181.3						
		Chajut	107	80.93	0	0	0	4	0	4
		Khadoran	108	80.01	0	0	0	4	0	4
		NaiRopa	151	70.82	0	0	0	5	0	5
				Total	15	0	3	17	24	59
	Nither	Tadasha	49	198.29	0	0	0	0	6	6
		Tihni	50	299.46	0	0	0	0	4	4
		Shush	51	477.53	0	0	0	0	5	5
		Ganchwa	52	341.94	0	0	0	0	5	5
		Katoha	53	299.46	0	0	0	0	5	5
		Bai	54	145.68	0	0	0	0	6	6

	Jaral	64	319.7	0	0	0	0	4	4
	Ghatu	72	194.24	0	0	0	0	5	5
	DagehAnni	74	72.84	0	0	0	0	5	5
	Bashla	76	190.2	0	0	0	0	4	4
	Kalog	77	354.1	0	0	0	0	5	5
	Kopardhar	85	107.93	0	0	0	0	3	3
	Moin	86	235.94	0	0	0	0	2	2
	Shush	51	477.53	0	0	0	5	0	5
	Ganchwa	52	341.94	0	0	0	6	0	6
	Kalog	77	354.1	0	0	0	6	0	6
	Shanah	79	364.21	0	0	0	5	0	5
			Total	0	0	0	22	59	81
		G.Total of 2029-30		23	8	9	67	92	199
		G.Total of the 10 Years		133	69	61	1328	452	2043

Abstract							
Name of Range	Category of Forest	Name of Working Circle					
		DKWC (in Ha.)	FSWC (in Ha.)	CWC (in Ha.)	PWC (in Ha.)	Eucalypit usOverlap ping WC (in Ha.)	Total (in Ha.)
Arsu Range	RFs	20	22	0	0	0	42
	I Class DPFS	33	0	19	68	0	120
	II Class DPFs	0	16	19	65	0	100
	III Class	0	0	0	369	131	500
	Total	53	38	38	502	131	762
Chowai	RFs	8	0	0	0	0	8
	I Class DPFS	58	15	12	10	22	117
	II Class DPFs	0	0	0	78	0	78
	III Class	0	0	0	337	61	398
	Total	66	15	12	425	83	601
Nither	RFs	0	0	0	0	0	0
	I Class DPFS	14	16	11	93	0	134
	II Class DPFs	0	0	0	38	0	38
	III Class	0	0	0	270	238	508
	Total	14	16	11	401	238	680
	G.Total	133	69	61	1328	452	2043

The plantation shall be carried out only after issuance of closure notification under 30(b) of IFA, 1927. It must be ensured that sufficient nursery stock should be available, before taking the areas for Afforestation under different schemes. Only plantable size and healthy plant should be planted in the plantation area.

7.14 Control and Deviation:

The areas prescribed annually for planting will be shown in the control forms and any excess or deficit carried forward in the control form and deviation statement. The successful planted areas only are to be counted against the prescribed planting programme. Any excess planting will not constitute a deviation. However, the short fall of any one year must be made good in the subsequent years.

7.15 Subsidiary Silvicultural Operations:

7.15.1 Treatment/beating up of failure of existing Plantation

With proper care, precautions and devotion, it should be possible to fill up the whole area successfully within the prescribed period. In case of the any failure, the same must be replaced in the years immediately following sowing and planting.

All existing young plantations should be strictly protected and tended properly. Maintenance operations such as fence repair, weeding, bush cutting, beating up of failures etc. should be carried out for a period of at least 5 years after the planting.

7.15.2 Weeding: Bush cutting and weeding of plants shall be done in accordance with the practice for each species, preferable in the rainy season. For Deodar, two weeding in the month of July and August shall be done.

7.15.3 Seed collection: “As you sow so shall you reap” goes the saying the seed should, therefore, be of good quality. It should be collected from healthy, well grown, vigorous and genetically superior trees. It may be noted that most of the morphological and physiological characters are inherited. The seed trees should preferably be middle aged as the seed collected from too young or too old trees is not good. The seed trees of each species should be selected by the Divisional Forest Officer or Range Officer and should be marked with a distinctive band. Instead of dispersing the seed collection work in the entire area, it will be better to select good forests of each species from where the seed is to be collected. This will concentrate the work and will facilitate supervision. Such seed stands should be properly thinned to weed out inferior trees and to allow sufficient light for each tree to induce more cone formation. It will be desirable to depute some special staff for seed collection at the time when the seed of different species ripens because the experience has been that the beat guards are not able to give due attention for seed collection work. Mechanical appliances such as light aluminum ladders, tree climbing aides, sickles, secateurs etc. should also be provided. The seed should be collected at the right time. The cones should be spread in sun to open and the seed should be separated and cleaned of cone scales, wings, unsound seeds and foreign matter. Sufficient quantity of seed should be collected so that some extra seed is used in the following year if it is expected to be a very lean seed year. This extra seed should be stored in cool places in suitable containers. The practice of purchasing the seed from the villagers should be discontinued because in that case the quality of the seed is not guaranteed. To ensure collection of good quality seed, it is prescribed that the seed will be collected departmentally from the seed trees selected for the purpose and no seed will be purchased from the villagers.

7.16 Nurseries:

It is universal truth that the degree of survival of plantations is directly linked to the quality of nursery stock raised in nurseries. More so, when we are faced with increasing swings in seasonal fluctuations, both in terms of erratic rainfall and rising temperatures. These recent changes in weather patterns exacerbate our historical woes of compacted soil, damage by fire and cattle and general lack of interest (and therefore concern) of local communities in our plantations. Vastly improved nursery stock can in a major way to address most of these impediments coming in the way of establishing successful plantations in and outside forests. In the recent years due to climate change, it has been decided to raise nursery stock in different size of polythene bags.



(View of Margi Nursery, Margi Block, Nither Range.)



(View of Ishwa Nursery, Arsu Range)

Few important qualities of any good nurseries would include:

- (a) It should be large in size (at least 0.5 to 1 hac.) so that it is cost effective and also proper infrastructure including water supply, germination chamber (poly-house), Mali-hut, soil mixing yard, vermin-compost etc can be developed.
- (b) Adequately trained, dedicated staff should be available in each nursery. Mali and laboureres should be trained and guided from time to time about raising of quality stock.
- (c) Each nursery should specialize in 5-6 species suited to the area and have large stock of each species, which is graded from time to time so that only quality stock goes for planting.
- (d) Soil mixture is most vital component for raising quality stock. Thus care must be taken not to compromise with quality of soil mixture (ideally 1:1:1 of soil: sand: vermin-compost) There are **21** nurseries in Anni Forest Division (as on 31st May, 2020) having a stock of **1053125** plants. Thus average number of plants per nursery is **50149 No.s** which is quite meager and should further be increased (and the average plant cost reduced) with development of infrastructure in more nurseries.

7.17 New Plantations:

7.17.1 Plantation Technique: The technique of raising each species should be as per standard techniques, instructions and guidelines issued from time to time and in conformity with the experience. The technique of “Forest Nursery work” and “Artificial Reproduction” in hills has been dealt with in the Technical Orders No. 3 & 4 contained in the Punjab Forest Manual, Vol-III and the techniques for plantations on type of land including choice of species for different localities have been given in the book titled as plantation Forestry in India by Sh. R.K. Luna. However, the following points deserve the special consideration. As discussed under Para 7.16, it has been decided in principle to plant only polythene raised plants in the plantation areas.

- (i) **Selection of Plantation Site/Area:** The area selected should be personally inspected by the Range Officers concerned keeping in view the suitability of the area, ease of closure and type of fencing etc. These should also be approved by the DFO/Conservator of forests. The requirement of grazing and grass-cutting of the right holders should also be given due consideration. The following points may be kept in view while selecting the site for plantation.
 - (a) **Migratory Grazier:** No plantation above and below the road should be carried out and the corridor should be maintained to avoid conflict between the department and migratory graziers. However, in suitable sites the tall planting may be carried out in the areas.
 - (b) **Rotational Grazing:** In the halting places of the grazier, no plantation should be carried out. Beside this emphasis on rotational grazing should be laid.
 - (c) **Refractory Areas:** No sites should be taken up for Afforestation which is refractory in nature and only well soil deposited sites should be taken.
 - (d) **Community Wood Lot:** The community wood lot should be established in between DPFs and adjoining habitation in order to reduce the pressure and avoid encroachments. Only fuel and fodder species should be planted outside the regular forests i.e. DPFs and listed UPFs.
 - (e) **Grazing land:** No attempt should be made for re-Afforestation of grazing land.

(f) **Water Harvesting Structures:** Emphasis should be made to established water harvesting structures near the plantation areas to increase the water regime.

(g) **Fire line:** A wide strips of preferably 5-7 mtrs. should be kept which will act as fire lines in the plantation areas and reduce the fire hazards.

(ii) **Fencing:** The plantation area should be efficiently/effectively closed by barbed wire fencing or social fencing. Fencing needs to be done around plantation sites only where it is necessary. Fencing along their steep slopes cliffs, should be avoided where it serves no purpose. However, it is advisable to plant bio-engineering species suitable for the area along three / four strand barbed wire fencing especially in areas where grazing incidence is high. Fencing work should be taken up during the rainy season along with live fence support even for area which is to be planted in the ensuring winter. Where economical, and especially along roads, RCC fence posts should be used for fencing. Tall plants of broad leaved species (6-8 ft high) wherever available can also be planted along the fence provided the area is adjacent to motorable road.

(iii) **Site Preparation:** Proper preparation of planting site requires special attention. Sites of pits should be marked in the field and on plantation map. The pits should be prepared/dug at least 2-3 months ahead of plantation work so as to allow proper weathering of soil and to enable maximum possible work done within the prime time of planting season. Proper inspection path should also be prepared to facilitate inspection and planting work. Pits of the standard size (30 cm x 30 cm x 30 cm for Conifers species, 60 cm x 60 cm x 60 cm for Chilgoza and 45cm x 45cm x 45cm for broad leaves) should be dug about 3-4 months in advance and the soil be heaped on the lower side of the pit. This helps in weathering and improvement of the soil.

The practice to cut and remove all bushes & shrubs from the plantation area is to be discontinued as shrubs and bushes help/prevent soil erosion and add in moisture retention. However, if the area has weeds species, then these are to be removed when the area is fenced.

(iv) **Sowing and planting:** The indigenous, well grown sturdy nursery plants of fast growing hardy species should be preferred and planted which can survive under the adverse conditions. The nursery should be preferably raised near to the plantation area or on road side, from where the plants could be transported with ease and facility to planting sites in minimum possible time.

(v) **Pure or Mixed Species:** As far as possible, pure crops should be raised over large blocks to avoid management difficulties.

(vi) **Plantation Practices:** It is suggested that the main species of the forest type either conifers or broad leaved should be planted in the plantation area. It is, therefore, to be ensured that for plantation programmes sufficient diversity of tree species is grown and available in the nurseries. It is also prescribed that wherever Fir, Deodar is being planted, the plants should be at least 3 and half years to 4 and half years old and 2 and half years old respectively. Similarly broad leaved species should be at least 1 year to one and half years old. Deciduous broad leaved species are to be planted during winter while conifers are to be planted during the rainy season.

7.18 Tall Planting:

As per instructions of PCCF, HP, from time to time that tall plants should be planted in the field and technique for raising the same in the nurseries is also given and must be followed because one of the main reasons for failure of plantations is grazing or trampling by cattle. Also drought, fire hazards contribute to failure. Thus, to overcome pressure of grazing and drought, planting of tall plants (above grazing height) with well developed root system and good collar girth is desirable. Such plants will be able to cope with droughts owing to their well developed

spread out root system, will be above grazing height and thus will survive grazing pressure and their good collar girth will help them withstand trampling. Such plants can be raised in nurseries for which month-wise operation activity is tabulated in table No. 7.3& 7.4.

Table No. 7.3

Raising of Deodar in Nurseries

Month	Activities for Raising Deodar
Nov-Dec	1. Sow Seeds in trays filled with only Vermi compost. Keep the trays in poly house. (1 kg deodar seed contains 8000-10000 seeds approximately)
March (1 st Year)	1. Prick in 6"x4" bags or in root trainers with potting mixture of 1:1:1 of sand, soil, vermin-compost
July (1 st Year)	1. Transfer to 9"x5" bag along with ball of earth, add some more soil at bottom and sides.
July (2 nd Year)	Transfer to 15"x7"bag along with ball of earth, add some more soil at bottom and sides
July (3 rd Year)	1. Plant 90% of the good quality plants 2. Retain 10% best plants from among the quality plants for production of ' Tall Plants ' and shift them in bags of size 20" x 12"

Table No 7.4

Raising of Deodar in Nurseries

Month	Activities for Raising Deodar
1	2
Nov	1. Sow Seeds in fresh cow dung immediately after collection as oak seeds are viable only for 7-14 days
Jan (1 st Year)	1. Prick the germinated seedlings in 9"x5" bags with potting mixture of 1:1:1 of sand, soil, vermin compost
July (1 st Year)	1. Transfer to 15"x7" bag along with ball of earth, add some more soil at bottom and sides.
July (2 nd Year)	Transfer to 20"x12"bag along with ball of earth, add some more soil at bottom and sides
1	2
July (3 rd Year)	1. Plant 90% of the good quality plants 2. Retain 10% best plants from among the quality plants for production of ' Tall Plants ' and shift them in cement bags

Tall plants of other deciduous species will also be raised in a similar way as that of Oak. But sowing time and technique will be as per species requirement. For deciduous tall plants, root-shoot cuttings will be raised in production nurseries while sowing will be done in mother nurseries. Nurseries with small area between 0.25 hac. to 0.5 hac. can be used as **Mother Nursery** for production of root-shoot cuttings of deciduous broadleaved species. Thus, all deciduous broad leaved species will not be grown from seed in production nurseries but their root-shoot cutting will be made in Mother Nurseries.

7.18.1 Notification of Closures: Every area to be taken up for plantation should be notified for closure one year in advance. The period of closure may be 15-30 years.

7.18.2 Plantation Journals: It is essential that whenever a site is selected for plantation a proper hard bound plantation journal is prepared for that site. The plantation journal must have a large sketch of the area showing boundaries and other details like nallas, rocks, existing patches of trees etc. It is important that GPS coordinates of at least 6 to 8 points around plantations are also recorded and entered in the plantation journal along with the altitude of the area. Details of all works carried out must be entered in the plantation journals and signed by the concerned officials showing date of signature. All inspecting officers are to record their visits and comments/observations in the plantation journals. Once a plantation journal is complete i.e. in the fourth and fifth year of the plantation, it should be transferred to the division office and kept properly in record there.

7.19 Land Bank:

The Compensatory Afforestation is one of the most important conditions stipulated by the Central Government while approving proposals for diversion of forest land for non-forestry purpose under Section 2 of the Forest (Conservation) Act, 1980. Para 3-4 of the Govt. of India's guidelines under which creation of a Land Bank for carrying out Compensatory Afforestation (CA) against different proposals in a compact area has been mandated and stipulates that the non-forest land identified for the purpose of CA is to be transferred to the ownership of the State Forest Department and declared as Protected Forest or Reserved Forest under the provision of Indian Forest Act, 1927. This transfer is required to take place prior to the commencement of the proposal.

In pursuance to the GOI guidelines it has been decided that each forest Division in the State shall earmark 10 to 15 hac. area as a Land Bank for carrying CA of all the projects approved in the Division. The land so identified shall be surveyed, demarcated and declared as Protected Forest under the provision of Chapter-IV of the Indian Forest Act, 1927. For declaration of areas as Protected Forest (PF), such procedure/methodology defined in the Indian Forest Act, 1927 shall be followed and necessary revenue entries made in the Revenue record under the provision of H.P Land Revenue Act, 1954.

In case of non-availability of degraded forest land or other Govt. land in a compact patch of 10-15 hac. in a particular Forest Division, CA against smaller projects can be done in the Land Bank identified in another Division of the Circle or within the State. Similarly, the MOEF, GOI vide D.O. No 25-217/2013-ROC dated 16th January, 2013 directed that non forest land identified for CA in lieu of the forest land diverted for non forestry purposes, has to be transferred to the ownership of the Forest Department and declared 'Protected Forest' and after that the declared protected forest will be added to the total recorded forest area of the State.

The detail of Land Bank area identified in Anni Forest Division in which plantation has been carried out and yet to be carried out is tabulated in table No.7.5& 7.6 respectively: -

Table No. 7.5

Land Bank in which the planation has been carried out: -

Sr. No.	Name of proposal	Area in hac	Date of Final approval	Proposed area of Land Bank in Ha.	Name of Forest
1	C/o Kufridhar Jaterh road	2.52	14-07-1999	5.24	Jarori III
2	C/o Anni –Basta road	2.58	22-09-2K	5.25	Badidhar
3	C/o Bakhnow-Deori –Chiterkut road	1.2	13-12-2002	2.5	NG III
4	C/o Chatti-Tunan by Kasholi road	6.714	23-03-05	13.5	Gundi
5	C/o Avera-ghatuvaiPipalHatti road	3.15	14-01-05	6.5	UPF- Bail
6	C/o Ranabag-Lagouti	1.467	23-03-05	3	UPF-Chapal
7	C/o Nanavati-Lagouti	2.8	02-06-2005	5.6	UPF-Ropa
8	Bagipul-Sarahan road	2.6	07-04-05	6	UPF-Chalai
9	Sechi-Mini HEP	1.06	28-04-2005	2.25	UpFNewkander
10	C/o Koil-Nither road	6.093	04-01-06	15	UPF-Shanah
11	C/o Kandugad-Patarna road	3.5	02-01-2006	7	UPF-MalchhAnni
12	Shush-Balu(vaiFanounti) road	3.408	06-10-2006	7	UPF-Karshala
13	Luhri-Dalash-Chowai road Portion Gugra to Gaon- Now (Kather-jaon)	1.05	24-10-06	3.6	UPF-NishAnni
14	Shahni-GulatuptoRopru	1.044	24-10-2006	2.1	UPF-NishAnni
15	Bhakan -Kharga	2.316	13-03-2006	5	UPF-Uchhimava
16	Bus stand cum work shop Anni	0.3948	27-12-2006	1	UPF-NishAnni
17	Rampur HEP 434 MW	69.3762	Apr-06	139	UPF-Bai&,Shalat
18	Runa-Thanog road	1.767	24-10-2006	3.6	UPF-Olwa
19	Luhri-Pipal Dhar	7.356	30-11-2006	15	UPF Sarli
20	Augmentation of W.S.S to Anni town	0.12	02-12-06	25	UPF-NishAnni
21	C/o New Miltray Station Averi	20.88	14-02-2006	42	UPF-Rallu, Bail, Shataldhar
22	Khanvi-Bansha road	2.427	02-03-2007	5	UPF-Bharai
23	Link road to Village Rechi to KhAnni	0.465	20-06-07	1	UPF-Tuni
24	Link road Kanathach -Kushwa	3.69	06-02-2007	7.5	UPF-Dugha
25	Charmin -Oddidhar	1.88	15-02-2007	4	UPF-Deem
26	Gugra-Kutwa road-	3.6	02-03-2007	7.25	UPF-Barua
27	Brow-Randal (VaiPoshna road)	3.798	20-12-2007	7.6	UPF-Brow
28	Haripur –Taluna road	1.089	15-02-2007	2.2	UPF-NishAnni
29	Rechathach-Shagagi road	1.08	02-03-07	2.2	UPF-hagagi
30	Panar-Jabu road	1.239	15-02-2007	2.5	UPF-Karana
31	Ranabag-DeoriKotVaijaibag road	2.49	13-03-2007	5	UPF-Kamand,Chhapol, Karshaigad
32	Chouradhar-Paneovai Zehra road	3.357	15-02-2007	6.75	UPF-ishta,Zehra,Peog
33	Chunagai-Bari uptoChAnniage road	1.236	15-02-2007	2.5	UPF-Pankwa
34	Pajenda-BijaliShamAnni – Darad	2.63	15-02-2007	5.5	UPF-Shalat C-6
35	Nirmand-Bahwa(Arsu-Bahwa road)	2.66	30-03-2007	5.5	UPF-Kathanda
36	Link road Moin	0.83	12-02-2007	2	UPF-Moin
37	Nouni-Rahnu-Kolth-Kanda-Katmore	2.52	15-02-2007	5.25	UPF-1/10Bashad
38	Kandalan-Forbog road	1.173	15-02-2007	3.35	UPF-Binan
39	Jaon-TaralavaiLadagi road	1.661	15-01-2007	3.25	UPF-Jaon
40	Karshaigad-Karshala road	1.527	25-04-2007	3.1	UPF-Karshala
41	Sinvi-Muhan	1.332	31-08-2007	2.67	UPF-Khaneri
42	Rest House Kungash	0.161	20-03-2008	0.5	UPF-Peog

43	Shamsher SHEP	1.932	04-04-2008	4	1/26 Parkot Shill C-II
44	Anni-II-Mini ABBP	1.86.99	30-12-2008	3.8	UPF-shurladhar
45	KasoliAdit	0.9274	28-05-2009	2	UPF-Rallu C-14
46	Chowaidhar-Thachwi	1.674	17-03-2010	3.5	UPF-Khaneri
47	Anni-Behna HEP	0.1806	28-01-10	1.25	UPF-Binan(Shurladhar)
48	Behna HEP	0.5456	28-01-2010	0.5	UPF-Haripur
49	Bashad-Sharsha	4.76	02-03-2010	9.52	UPF-Margi
50	Farbog to Thach	1.194	15-02-2012	3	UPF-Shurladhar
51	Galed to Boong	1.885	15-02-2012	4	UPF-Kathanda
52	KhadirBavli to Jundu	1.483	15-02-2012	3	UPF-Kathanda
53	Runa-Jundwa	2.491	15-02-2012	5	UPF-Shurladhar
54	Aug. WSS Village Brow to KhatlugadKasholi	0.0121	04-01-2012	0.025	UPF-Kathanda
55	Kandugad-Jaon	5.835	21-02-2012	11.7	UPF-Shurladhar
56	Sharoo to Kapti	5.766	16-02-2012	12	UPF-Kathanda
57	Panetanal to Bishal	1.974	16-02-2012	4	UPF-Shurladhar
58	Chaklot to Chunagai	2.766	16-02-2012	6	UPF-Kathanda
59	Bakhnaon-DughaShagan.	3.94	20-04-2012	8	UPF-Binan (Shurladhar)
60	Chimny-Mundhdal	0.906	02-07-2012	2	UPF-Shurladhar
61	Pali to Prantla	1.008	02-07-2012	2	UPF-Kathanda
62	Nalti-TharwawaiArsooAmtua	1.77	10-09-12	3.6	UPF-Tharua
63	Kanvi to Dasholi	1.203	30-08-2012	2.5	UPF-Kathanda
64	Thans to Dasholi	1.398	30-08-2012	3	UPF-Kathanda
65	Perinala to DawarchKhogwa	4.96	30-08-2012	11.65	UPF-Shadidhar
66	Kurpun Hydro Electric Project. (5MW)	4.836	08-03-2013	10	UPF-Nagerh
67	Power Grid Corporation of India	10.5068	03-04-2013	24	UPF-Juni-Kuri
68	66 KV line Kumarsain to Nogli	3.51	13-05-2013	9.5	UPF-Bail
69	Kathar to Khadvi road	2.62	14-05-2013	5.5	UPF-Nagerh
70	Dawah to Badari road	1.979	14-05-2013	4	UPF-Kathanda
71	Rumali to Deem road	2.475	22-05-2013	5	UPF-Nagerh
72	Punan to Gada Deem road	4.506	22-05-2013	9	UPF-Shadidhar
73	Tharla to Sagofa road	2.169	07-06-2013	4.5	UPF-Kathanda
74	Arsoo to Kundakod road	1.935	21-06-2013	4	UPF-Kathanda
75	Sh. Satya Pal Thakur Mining/ stone quarry	1	21-06-2013	2	UPF-Shurladhar
76	Widening of WazirBowali Averi	2.2	08-07-2014	4.5	UPF-Kathanda
77	66KV transmission line from Baragaon- Nigan.	4.9887	25.10.14	4	UPF-BanahardharKotgarh Division
78	Jaon-oddidhar road	1.247	18.06.15	2.5	UPF-Kathanda
79	Jharal to UpparBehri	0.28	27.08.15	0.56	UPF NishAnni
80	GSSS Ladhagi	0.5294	04.04.2016	0.5294	1/11 Kut
81	Widening & Strengthening work from Km. 0/00 to 23/00 (Old Km. 74/00 to 97/00) of Sainj-Lujri-Aut Road on NH-305 in the State of HP	3.856	03.04.2017	7.712	UPF Nore
82	Luhri Project Stage-I	98.1004	28.03.2019	100	UPF Fanounti (60hac.), UPF Shush (28 hac.) UPF Kamand (6 hac. & UPF ReunsKot (6 hac.)
83	C/o road Kandagai to Sour	2.009	17.01.2019	5	2/22 BhamourJadaari
84	C/o 66 KV D/C Transmission Line from 66/22 KV GIS Sub-Station Bagipul to 66/220 KV Sub-station Kotla.	36.4344	30.05.2019	48	UPF Olwa (30 hac.), UPF Uthkhaner(5 hac.), UPF Kashmal (5 hac. & UPF Bashla (8 hac.)

Land Bank in which the plantation yet to be carried out: -

Table No 7.6

Sr.No.	Name of the Proposal	Area in Ha.	Proposed area of Land Bank in Ha.	Name of Forest
1	C/o road Pathohardhar to Sharthi	2.235	4.5	UPF Sharthi
2	C/o Chhaniage to Upper Pankwa	1.295	2.59	UPF Dogrinal
3	C/o Shamshar to Panei	5.31	10.62	UPF Bai
4	C/o BohtaPalkAnni	2.922	5.84	UPF Moin
5	C/o Bus Stand Luhri	0.405	0.8	UPF Shush
6	C/o Maninvi to Tharvi	2.92	6	UPF Kamand
7	C/o Kurpan –II Project	3.2188	6.8	UPF Dogrinal
8	C/o road from Bhojupnai to Lamidungri	2	4	UPF Pankhad
9	C/o Luhri Project Stage-I (Additional land for MoinQuiry Site)	0.9486	1.9	1/19 Lamidhar
10	Kurpan Velley Project	0.7449	0.7449	UPF Dogrinal
11	Kandughat Project 3MW	1	2	UPF Sampal
12	C/o Market yard at Anni	0.69	0.69	2/22 BhamourJadari
13	C/o Muhan to Marechh	1.468	3	UPF Olwa
14	C/o Koil to Bashla	7.929	18	UPF KhAnni& UPF Kalog
15	C/o Sarahar to Kathaya	0.34	0.34	UPF Shah
16	Re-alginment/shifting of Transmission line KN-51 to KN-62 at North	4.9166	10	UPF Moin
17	C/o Moin Nalla to AdshiuptoBuai	3.72	7.5	UPF Kalog
18	C/o Patarnakenchi to Mishta	6.168	12.3	UPF Bai

It has been observed that in spite of instruction issued from time to time by the GOI, due care has not been taken regarding declaration of Protected Forests. Therefore, Divisional Forest Officer Anni is required to take up necessary steps in this regard and all the identified Land Bank shall be declared as Protected Forest (PF) under Section 29 of Indian Forest Act, 1927 and necessary revenue entries made in the revenue record under the provision of H.P Land Revenue Act, 1954.

7.20 Other Regulation:

7.20.1 Closure: All the plantation areas will remain closed for grazing. The areas should be duly notified for closure under Section 30 (b) of Indian Forest Act, 1927 for a period of 15-20 years and the notification for closure should, therefore, be published well in time in advance of actual planting. Old plantation may be thrown open if these are beyond grazing damages. Effective closure is a must in order to reduce the total closure period of each plantation depending upon the progress of the new crops.

7.20.2 Grass Cutting: No grass cutting shall be allowed till the plants grow above the level of the grass or shall be allowed except under strict supervision of the forest guard under MGNREGA of the scheme and it should be ensured that no plants are cut along with grass. Removal of grass reduces competition and also mortality due to fire hazard and overhead shade. Or it is better if Panchayats are associated for the purpose. The ghasni should be put to open auction and amount

from the auction can be suitably distributed amongst all the right holders or to generate income for the Panchayats.

7.20.3 Lopping: Tree standing in the plantation areas shall remain prohibited for lopping during the closure period and it should be got notified under Section 30 (b) of the Indian Forest Act, 1927. Therefore, notification for prohibition should be published well in time under Section 31 of Indian Forest Act, 1927.

7.20.4 Fire Protection: All the plantation area will be strictly fire protected. The measures suggested for different species in the respective Working Circle will apply. Legal measures as suggested in different Working Circles and Protection Working Circle shall be followed. No deviation is allowed.

7.20.5 Grazing: All plantations areas shall remain closed for grazing for 15 to 30 years period depending upon the progress success of plantation. The closure should be effective and for the minimum possible time, so that least hardships is experienced by right holders. However, depending upon the progress of the young crop, particular area may be thrown open to grazing even before the period of closure expires.

7.21 Plantation Records:

- (i) Plantation journal will be maintained in accordance with the standing orders/instructions for each plantation area on the standard form prescribed for the purpose. A location map on 1:50,000 scales should also be prepared and prefixed to the journal.
- (ii) Plantation boards should be put at prominent places, and written in Hindi, giving name of plantation, area, year of commencement, and other details of work. A simple small wooden/tin board; written in Hindi by staff will be sufficient instead of commercial type of high priced one.
- (iii) Notes on germination, establishment, casualties' etc. are given regularly by the Range Officer, and inspection notes of visiting Officers are incorporated in the journal.
- (iv) A detailed map showing various species and its extent should be prepared on 1:15,000 scales and placed in plantation journal.

7.22 Monitoring and evaluation:

Monitoring and evaluation of plantation activities have not received due attention in the past. It is, therefore, prescribed that regular review of the plantation area with respect to success percentage and suitability of species planted should be done till establishment. Various reports will also put before the revision committee of the Government of India/ State at the time of inspection for midterm reviews.

CHAPTER VIII

THE NON TIMBER FOREST PRODUCE (OVERLAPING) WORKING CIRCLE

8.1 General Constitution:

This Working Circle overlaps with other Working Circle and is constituted to ensure systematic development and exploitation of non timber forest produce species that occurs in this division. The area is very rich in medicinal plants but so far not much scientific efforts has been made to preserve and propagate the minor forest produce.

With the thrust of forest management shifting from being “tree centered” to people centered, forests are now been viewed as a source of not only commercial timber but also of valuable non timber forest products as well. There is the need to emphasize on the study, exploitation and marketing of valuable medicinal plants found in this division. The main non timber forest produce found/extracted in the Division are Medicinal plants like Dhup (*Jurinea macrocephala*), Karu (*Picrorhiza kuroa*), *Podophyllum emodi*, Chukkri, *Aconitum violaceum* (Tilla), *Dioscorea deltoidea* and Kuth (*Saussurea lappa*) etc. The main emphasis/focus would be on medicinal plants.

8.2 General Character of Vegetation:

This Working Circle overlaps and extends over several types of forests. Earlier, the management of forests was based on production of timber and earning of revenue rather than conservation of bio diversity. The non timber forest produce were considered to be much lesser importance. After 1980, the earning of revenue from forests and their management for commercial production of timber has been discouraged from the policy framework and objects of management. The 1988 National Forest Policy emphasizes on in situ conservation of natural environment. Conservation and propagation of non-timber forest produce and their contribution towards local/tribal economy has also given importance in the policy. The forest areas of this Working Circle are located in different altitudinal zones and therefore, there is marked variation in the non timber forest produce. The Non Timber Forest Produce found in this division along with their altitudinal zonation and brief description is tabulated in the table No.8.1.

Table No-8.1

Sr. No	Botanical name of the Minor Forest Produce	Local name of the Item	Altitudinal zonation	Remarks
1	<i>Ainslaea aptera</i>	Sathjalori	2500-4500 mts.	Biennial herb
2	<i>Acotinum chasmanthum</i>	Karvipatish	3000-5000 mts.	Biennial herb
3	<i>Picrorhiza kurroa</i>	Karoo	3000-4000 mts.	Perennial herb
4	<i>Jurinaea macrocephala</i>	Dhoop	3500-4500 mts.	Perennial herb
5	<i>Podophyllum hexandrum</i>	Ban Kakri	2600-4500 mts.	Perennial herb
6	<i>Angelica glauca</i>	Chora	2700-3000 mts.	Perennial herb
7	<i>Viola serpens</i>	Banafsha	upto 2000 mts.	Perennial herb
8	<i>Valeriana wallichii</i>	Mushbala	1600-3600 mts.	Common in forest under growth.
9	<i>Rheum emodi</i>	Rewandchini	3300-5200 mts.	Common as forest under growth.
10	<i>Dioscorea deltoidea</i>	ShingliMingl	1500-2800 mts.	The species is dwindling

		i		due to over exploitation.
12	<i>Thymus serpyllum</i>	Banajwain	1500-4500 mts.	Evergreen Perennial herb
13	<i>Atropa acuminata</i>	Balladuna (Jhraka)	2500-3000 mts.	Perennial herb
14	<i>Morchella esculenta</i>	Guchhi	2200-3200 mts.	Ascomycetes fungi (perishable)
15	<i>Potentilla nepalensis</i>	Dori	2000-3000 mts.	Perennial herb
16	<i>Pistacia integerrima</i>	Kakarsinghi	350-2400 mts.	Moderate size deciduous tree.
17	<i>Polygonatum verticilatum</i>	Salam Mishri	2000-2800 mts.	Perennial herb
18	<i>Aconitum heterophyllum</i>	Patish (Mithi)	3000-5000 mts.	Biennial herb
19	<i>Salvia moorcroftiana</i>	Thuth	upto 1800 mts.	Perennial herb
20	<i>Selinum vaginatum</i>	Butkesh	1800-3800 mts.	Perennial herb
21	<i>Taxus baccata</i>	Brimi	1800-3300 mts.	Evergreen tree.
22	<i>Rhododendron campanulatum</i>	Kashmiri patta	2400-5200 mts.	Evergreen shrub.
23	<i>Dactylorhiza hatagirea</i>	Salam Panja	2800-4200 mts.	Terristrial orchid.
24	<i>Valeriana hardwickii</i>	NihAnni	1500-4000 mts.	Biennial herb
25	<i>Acorus calamus</i>	Barian/Bach	upto 2600 mts.	Perennial herb
26	<i>Pinus wallichiana</i>	Kail cones	2000-3500 mts.	Evergreen tree.
27	<i>Berberis aristata</i>	Rasaunt	1650-3400 mts.	Deciduous shrub.
28	<i>Adiantum lunulatum</i>	Dusgtuli	upto 2800 mts.	Perennial herb
29	<i>Lichens</i>	Chalora	600-3500 mts.	Perennial lichen.
30	<i>Abies spectabilis</i>	Talis patra	3600-4200 mts.	Evergreen tree.
31	<i>Saussurea lappa</i>	Kuth	2600-4000 mts.	Perennial herb
32	<i>Gerardiana heterophylla</i>	Bichhubuti	800-6000 mts.	Perennial herb
33	<i>Pyrus pashia</i>	Kainth	upto 3000 mts.	Deciduous tree.
34	<i>Rhododendron spp</i>	Brass phool	1200-4000 mts.	Evergreen tree.
38	<i>Aesculus indica</i>	Khanor	1800 to 3000 mtrs.	Tree

8.3 Special objects of Management:

The State has formulated Himachal Pradesh Forestry Sector Medicinal Plants Policy, 2006 which is aimed at conserving and strengthening medicinal plant resource base in forest areas as well as outside for use towards enhancing health and livelihood security of the people of the State on sustainable basis. The special objects of management are:-

- (i) To identify economical NTFP and useful species of herbs, shrubs and fungi for exploitation.
- (ii) To preserve and improve the quantity and quality of NTFPs in this division and manage them on sustainable basis.
- (iii) To conserve and augment existing non timber forest produce including medicinal plants resource in its natural habitat.

- (iv) To encourage cultivation of commercially important species of medicinal plants on private lands.
- (v) To provide sustained employment and supplementary income to the local population by popularizing the conservation of natural resources.
- (vi) To develop a system of pricing the wild harvest so as to reflect both the conservation costs and the community benefits.
- (vii) To encourage public-private-community partnership for building capacity for cultivation, value addition and processing of raw material before exporting the forest produce from the state.
- (viii) To maximize yield of medicinal plants through sustainable natural and artificial regeneration and scientific exploitation of forest produce by enforcing legal control mechanism on exploitation etc.

8.4 Area Statement:

The Working Circle is overlapping, no area statement is required.

8.5 Blocks and compartment:

The entire tract of the division will be covered by taking beat as a unit.

8.6 Analysis and Valuation of the Crop:

8.6.1 Non timber forest produce are an important source of livelihood for forest based poor people in State of H.P. Non timber forest products include fodder and grasses, herbal medicinal plants, leaves, and resins and many forms of food including nuts, wild fruits, Chilgoza, roots and honey etc. Gathering these from the forest for subsistence and sale forms an integral part of the livelihood strategies of the poor.

8.6.2 As far as medicinal plants are concerned, Himachal Pradesh is one among the major suppliers in Indian market. More than forty species, enlisted by the State Forest Department are exported from the State. But the actual list of produce could well be much. Collection and selling of medicinal plants occupy an important place in the household economy in some parts of rural Himachal Pradesh. It is difficult to estimate the extent of employment generated by this sector for rural people in the State since most of the activities under this sector is considered to be unorganized. It is not even easy to identify the linkages whereby it has with organized sector. In other words the intersection of informal and formal linkages in this sector is another important issue of concern. In economic literature the phrase informal sector refers to the economy in which the employed persons do not enjoy the advantages of unionization, social security and other associated benefits, or any assurance of regular employment.

8.6.3 The entire tract is rich in many useful shrubs, herbs, fungi which have been exploited from time to time. The area produces large quantities of Banafsha, Karu, Dhup, Salam Panja, Chukri, Shinglimingli, Guchhi, Rakhal, Lichens, Berberis roots etc. A list of commonly used or economically extracted medicinal herbs, plants occurring naturally area is tabulated in table No. 8.2

Table No. 8.2

Medicinal Plants found in Anni Forest Division

Sr. No.	Botanical Name	Common Name	Habit	Occurrence Zone	Parts Used
1	2	3	4	5	6
1.	<i>Aconitum heterophyllum</i>	Mithi Patish	Herb	Sub alpine	Root
2.	<i>Aconitum chasmanthom</i>	Patish, Atish	Herb	Sub alpine	Root
3.	<i>Acorus calamus</i>	Barian/Bach	Herb	900 to 2000m	Rhizome
4.	<i>Angelica glauca</i>	Chora	Herb	Above 2200m	Whole plant
5.	<i>Artimisia nilagirica</i>	Siski	Herb	1500-2500m	-do-
6.	<i>Asparagus adscendens</i>	SufedMusli	Shurb	Upto 1800m	Root
7.	<i>Berberis spp.</i>	Rasaunt(Kashmal)	Shurb	1800-3200m	Root
8.	<i>Ainslaea aptera</i>	Sathjalori			
9.	<i>Cannabis sativa</i>	Bhang	Herb	Up to 1600m	Leaves
10.	<i>Cinnamomum tamala</i>	Tejpatta	Shurb/tree	Up to 2200m	Leaves
11.	<i>Dioscorea detoidea</i>	ShingliMingli	Climber	Up to 2200m	Tuber
12.	<i>Lichens</i>	Chalora	Herb	2000-2500m	Whole parts
13.	<i>Morchella esculenta</i>	Guchhi	Fungus	1500-2500m	Fruiting body
14.	<i>Myrica nagi</i>	Kaphal	Tree	1000-2100m	Fruit
15.	<i>Dactylorhiza hataqirea</i>	Salam Panja	Herb	Above 3000m	Roots
16.	<i>Picrorhiza kurroa</i>	Karoo	Herb	Above 3000m	Roots
17.	<i>Pistacia integerrima</i>	Kakarsinghi	Herb	Upto 1500m	Fruit
18.	<i>Podophyllum emodii/hexandrum</i>	Bankakri	Herb	Above 2200m	Rhizome
19.	<i>Polygonatum verticilatum</i>	Salam Mishri	Herb	2300-3000m	Leaves
20.	<i>Potentilla fulges</i>	Bajardanti	Herb	1500-3000m	Roots
21.	<i>Pinus wallichina</i>	Kailcons	Tree	1500-3000m	cones
22.	<i>Rhododendron arboreum</i>	Cheo (Brass)	Tree	1200-2400m	Leaves

23.	<i>Rhododendron companulatum</i>	Saranger	Tree	Sub alpine	Flower
24.	<i>Rheum emodi</i>	Rewandchini			
25.	<i>Bergenia ligulata</i>	Pathar Tor	Shrub	1800m & above	Whole plant
26.	<i>Swertia charata</i>	Chiryata	Herb	Sub alpine	Flower
27.	<i>Salvia moorcrotiana</i>	Thuth	Herb	Sub alpine	Flower
28.	<i>Sassuria lappa</i>	Kuth	Herb	Sub alpine	Roots
29.	<i>Gerardiana heterophylla</i>	Bichhubuti	Herb	Sub alpine	Leaves
30.	<i>Taxus wallichiana</i>	Rakhal	Herb	2400-3000m	Leaves
31.	<i>Thumus sarphyllum</i>	Banajwain	Herb	1200-1800m	Seeds, leaves
32.	<i>Tinospora cardifolia</i>	Gloe	Herb	1500-2200 m	Leaves
33.	<i>Viola serpens</i>	Banafsha	Herb	1000-3000m	Flower
34.	<i>Valeriana wallichii</i>	Mushbala	Herb	2100-3000m	Root stock
35.	<i>Valeriana hardwickii</i>	NihAnni	Herb	1200-3600m	-do-
36.	<i>Hippophae</i>	Seabuck thorn	Shrub	2400-3000m	Seeds
37.	<i>Centella asiatica</i>	Brahmi	Herb	Sub-temprate/ temprate	Leaves
38.	<i>Sapindus mukorossi</i>	Ritha	Tree	.	Seed

Source:- (ISST survey 1998 and Navrachna)

8.6.4 The existing method of collection, extraction and marketing are as per the provision on the Forest Settlement Report, 1921. The people use to exercise these rights and have been collecting medicinal herbs and plants for the preparation of medicine for local use and consumption. With the establishment of new pharmaceutical units, the demand of these medicinal plants has increase many folds. With the increased demand coupled with lucrative prices of these herbs and plants has seen a sudden spurt, in extraction of these plants in all the forest areas. The local right holders are now using all sorts of unscrupulous method in order to extract/collect more and more quantities of these NTFP species.

8.6.5 A wide variety of wild medicinal and aromatic plants and other genetic resources are found in the high hills of wet temperate zone. The gathering and sale of high value medicinal plants from the surrounding forests as well as pasture lands above/ human settlements has traditionally been an important source of cash income in these areas. The collection of the herbs from the alpine pastures and distant forests is considered to be as specialized task undertaken by physically stronger and young members. The men live in groups with bags stocked with food and bedding for long journey. The grazing of cattle is usually combined with the extraction activities

the collector gathers and dries the herbs on the alpine pastures and brings to home for marketing. Along with herbs for marketing these men also brings home other plants with either medicinal or religious use in the house hold. The seasonal pattern of collection varies considerably with the bulk of collection concentrated between March and November and conceding and interspersed with agricultural and live stocks activities. Time of extraction described as scientific for some of the medicinal plants is tabulated in table No. 8.3

Table No. 8.3

Sr. No.	Species		Month of extraction
	(Common name	Scientific name	
1	2	3	4
1	Singli-mingli	<i>Dioscorea deltoidis</i>	July-October
2	Bach	<i>Acorus calamus</i>	March-May
3	Banfasha	<i>Viola serpens</i>	April-July
4	Brahmi	<i>Centella asiatica</i>	April-June, September-December
5	Harar, Behra, Amla	<i>Terminalia chebula</i> , <i>Tbelerica</i> , <i>Embelica officinalis</i>	January, October-December
6	Kakarsinghi	<i>Pistacia integerrima</i>	September-November
7	Neelkanthi	<i>Ajuga bracteosa</i>	August-September
8	Tejpatta	<i>Cinnamomum tamala</i>	Jan-March, December
9	Dhoop	<i>Jurienamacrocephale</i>	August-October
10	Guchhi	<i>Morchella esculanta</i>	April – July
11	Salam panja	<i>Dactylorhiza hatagirea</i>	August-October
12	Karoo	<i>Picrorrhiza kurroa</i>	August-October
13	Patish	<i>Aconatum chasmanthom</i>	August-October
14	Kuth	<i>Sassuria lappa</i>	August-October
15	Thuth	<i>Salvia moorscotiana</i>	August-October
16	Salam Mishri	<i>Polygonatum verticillatum</i>	July-October
17	Rakhal	<i>Taxus baccata</i>	September – November
18	Mushkbala	<i>Valerian wallichii</i>	June – September
19	Sapdotri	<i>Berginia species</i>	July-October
20	Mehandi	<i>Lichens</i>	July-August
21	Chora	<i>Angelica glauca</i>	August-October
22	Bankakri	<i>Podophyllum emodi</i>	July – October

Source:- (ISST survey 1998 and Navrachna)

Pre mature and destructive extraction also takes place due to the open access to all collecting villagers as also a competition for resources within the collectors of a village.

8.6.6 The local people sell the medicinal herbs and plants collected seasonally and few people extract/collect these medicinal plants on whole time basis and spend several months in high reaches for collection of these plants to the local contractors. The contractors in turn sell/export these produce to the market situated outside the state. These contractors pay the prices to the local

people much below the prevailing market rates. The collection and export permits are issued by the forest department on payment of nominal fees. Since, the medicinal herbs and plants fall under the category of forest produce, the movement and export of these NTFP is regulated under the H.P. Forest Produce Transit Land Routes/ Rule, 1978.

8.6.7 The continuous extraction of herbs and its parts has posed a great threat for the natural use which are being extracted continuously unscientifically and through faulty means by the local people or the labourers engaged in extraction of NTFP. Alarmed with the serious state of affairs, the State Government, by its notification has increased the export fee of the medicinal plants in order to rationalize the export of medicinal herbs. Further, the HP Forest Department has also issued many regulatory instructions for the exploitation of the medicinal wealth.

8.6.8 Stock Map: As the medicinal plants are mostly herbs and shrubs found on annual or perennial basis, stock mapping is not possible.

8.7 Silvicultural System:

As no silvicultural system is prescribed, no specific operations are proposed. However, when the medicinal plants are raised in the nurseries or plantations, the regular operations like closure, weeding, bush cutting, protection from fire, grazing etc. are to be carried as in case of tree species.

8.8 Calculation of Yield:

No yield can be prescribed as the most NTFPs are extracted through right holders. However, proper record of all the NTFPs exported, should be maintained annually and entered in respective compartment history files. The detail of various NTFPs exported outside from Anni Forest Division since 1999-00 to 2019-20 is tabulated in table No. 1.9 under Paragraph No. 1.17 of Chapter-I of Part-I.

8.9 Method of Treatment:

No data or information is available for laying down the method of propagation, management, conservation, extraction or fixing any rotation for obtaining maximum yield of the medicinal plants without damage to its multiplication in the settlement Reports, 1921 and previous Working Plan. To put a stop of excessive extraction year after year or degradation of environment and ecosystem, it is felt necessary to give rest for the area at least once in the three years for regeneration of resources and to avoid further degradation. Therefore four year extraction cycle of medicinal plants has been regulated by the State Government.

8.9.1 Rotational Extraction: The unscientific and unsystematic extractions of medicinal plants are likely to reduce the yield and quality of plants and may even lead to disappearance of the species. In order to avoid the chances of over exploitation of the NTFP by the right holders or the traders has regulated the extraction of various medicinal plants, herbs and shrubs by laying 4 years collection cycle as per instruction contained in the Pr. CCF H.P letter No. Ft. 12-306/57 (M) dated 8-2-1994. Regeneration operations include raising of nursery stock, planting, weeding and the maintenance etc. No species are allowed to extraction from the prescribed area which has not been approved in extraction cycle by the competent authority. The extraction shall be done in a sustainable manner and has not to be caused any ecological or environmental damages.

Therefore, a four year extraction cycle of medicinal plants is already enforcing in this division which has been received from CCF, Rampur vide his office Letter No.6785-88 dated

28.02.2018 This cycle will continue and is extended further during the plan period as given in table No. 8.4.

Table No. 8.4

Year of Working	Name of Division			
	Rampur	Kotgarh	Anni	Anni at Luhri
	Name of Range	Name of Range	Name of Range	Name of Range
2018	Sarahan	Kotgarh (Bhareri&Narkanda block)	Kalpa&Malling	Arsu
2019	Rampur	Kotgarh (Shillaru Block)	Bhaba Nagar, Pooh	Nither
2020	Bahli	Kumarsain (Kumarsain and Baragaon Block)	Nichar, Moorang&Katgaon	-
2021	Nankhari	Kumarsain (Kangal Block)	Kilba	Chowai

8.10 Artificial Propagation and Conservation :

Keeping in view the economic importance and demand of medicinal herbs, it is desirable to encourage naturally occurring medicinal plants in suitable localities. The demand of medicinal plants has picked up with setting up of pharmaceutical industries in the state. The existing germplasm of different herbs needs to be conserved. Following measures are suggested for the conservation, protection and propagation of medicinal plants:-

- Systematic rotational collection as per approved four year cycle should be followed strictly.
- Heavy grazing and destruction of medicinal herbs should be checked as these species do not produce sufficient seeds/vegetative form of regeneration.
- The raising of nurseries/herbal gardens, drug farms should be developed through various research institutes like HFRI, UHF, Nauni, HPKV V Palampur, CSIR Palampur, Ayurveda department who are engaged in medicinal and aromatic plants.
- Medicinal plant collectors should be educated and provided proper information or guidelines so that there is continuous regeneration of medicinal herbs.
- The community based organizations like Mahila Mandals, Yuvak Mandals, VFDCs and other rural co-operatives should be involved in the development, protection, propagation and conservation of medicinal plants through Gram Panchayat.
- The local organizations should also be encouraged to propagate the indigenous medicinal plants through the centrally sponsored schemes like State Medicinal Plant Board/National Medicinal Plant Board etc.

8.11 Community versus official efforts in Conservation of Medicinal Plants:

The growing demand for rare Indian herbs in the Ayurvedic and cosmetic industries inside and outside the country is a cause for concerned to environmentalists, who fear this burgeoning demand might soon lead to the total extinction of wild plants from their natural habitat. Unfortunately there is little or next to no statistical data available on many of these slow growing wild species. Several of these cannot be grown artificially without leading to a loss of their medicinal properties, according to experts in the field. Himachal has witnessed one of the oldest initiatives in involving local communities in natural resource management in the form of forest

co-operatives in Kangra. In the past independence era community involvement was first envisaged under the social forestry programme in the form of protection of fuel wood plantations on community lands.

In 1993, the State Government issued an order regarding the involvement of local communities in rehabilitating degraded forests in a programme widely known as joint forest management.

Traditional efforts in conservation had received a big blow in areas where they have come to a direct conflict with the interest of the collected or the traders, as a possible source of higher income. Forest department has taken steps to stop and reduce extraction of few medicinal plants. Department is controlling the extraction of some species by allowing its collection on rational basis.

Every year only a single Range will be open for collection in one division. In this way the closed areas will get some time for regeneration of that particular species. The forest department claims that the extraction of *Taxus baccata* has been closed in the area for couple of years.

8.11.1 Demand from outside markets and impact on State Market: From the talks with traders in Himachal Pradesh, it seems that entire market in the state is operating on the demand from outside the state. There is no report of government purchase of medicinal plants from the villagers, neither any report of helping them directly or indirectly to sell out the herbs. It has to be noted down at this point that, there are 14 Ayurveda hospitals in the state and over 200 Ayurveda dispensaries spread all over the State.

Probably they procure raw herbal medicines, but information on it is yet to be gathered. As far as processing of herbal medicines in the state is concerned, there are not many processing unit in the state. The entire market in the State runs on the basis of personal and oral contract.

A change in market structure has been noticed during recent years. Earlier Rampur used to hold a very important position in the trading of medicines plants for entire Anni, Sub-Division, Kullu district and western part of Shimla district. Later on, Bagipul of Anni Forest Division has also developed in procuring the medicinal plants (including Herbs & Shrubs). But the importance of the Rampur&Bagipul as nodal market has declined in last few years. The main reason is emergence of a number of valley level traders in the region. The valley traders either directly purchase from the right holders collectors or they recruit Gorkha labours to extract medicinal plants directly from the forest before exporting them directly to Amritsar, Uttarakhand and Delhi. As a result huge volumes of medicinal plants are going out of the State, bypassing the nodal markets like Rampur&Bagipul. Secondly the improvement of transport facilities and telecommunication facilitates has also has influenced the market structure to some extent. Previously the medicinal herbs / produce used to come to the nodal markets on foot from the distant inaccessible area. Now a day's transport facilities have made it easier for the trader to send the materials by trucks from many of those areas which were inaccessible earlier.

8.11.2 Income and Employment Generation: Extraction of medicinal plants by the villagers for sale is an age old practice, in various parts of Himachal Pradesh extraction is undertaken largely by the family members of different age and sex groups. Presently the estimation of income generated by villagers is not known but is undoubtedly a fact that some of the villagers are earning hand some amounts by selling medicinal plants legally as well as illegally. The ups and downs in the annual earnings are corresponding to the intensity of collections during the peak extraction period and the season happened to a peak or trough year for collection.

8.12 Propagation Techniques:

Whereas method of propagation and harvesting of important plants be standardized after research in puts, the technique of propagation and harvesting of some important plants is described in the table No 8.5

Table No. 8.5

Method of Propagation of Medicinal Plant

Name	Method of Propagation	Harvesting/ Collection	Uses
1	2	3	4
<i>Acorus calamus</i>	The species is propagated by sowing as well as planting rhizomes at 15m deep at 30cmx30cm spacing during Feb.-March. If direct sowing is decided, then the soil is worked up to a depth of 15 cm. Sowing is done in patches which may be spaced at 30cmx30cm.	Harvesting is done after one year during Nov.-Dec.	The dried rhizome is generally used in the form of infusion. It produces best results in case of dyspepsia and chronic diarrhea.
<i>Aconitum heterophyllum</i>	The species is propagated by direct sowing in patches at 30cmx30cm during Feb.-March.	Roots are dug out in the month of Oct.-Nov.	Roots are used as astringent, tonic and in diarrhea, cough.
<i>Angelia glauca</i>	The species is easily propagated by sowing in patches at spacing of 3'x3'. Sowing is carried out in Feb.-March.	Collection/harvesting is done in Sep.-Oct.	Roots, fruits used for flavouring. Used in medicines for digestion, heart burn, flatulence.
<i>Dioscorea deltoidea</i>	It is propagated by planting rhizomes in 15cm deep pit at the spacing of 60cmx45cm during March. About 15-18 Qtls. of rhizomes are required for one hectare area.	Tubers are dug out in Nov.-Dec.	Tubers yield steroidal saprogenic which is a source for manufacture of oral contraceptive.
<i>Heracleum candicans</i>	The species is propagated by seeds and root cuttings. Seeds@ 10-15 Kg/ha are required. The root cuttings 2.5cm to 4 cm long should be planted in 30cm deep pits at a spacing of 75cmx50cm in March-Apr.	After one year, the roots/tubers are dug out in Oct.-Nov.	Roots are source of xantotoxin, a furocoumarin which is used in treatment of leucoderma, fruits as aphrodisiac and nervetonic
<i>Podophyllum emodi</i>	The rhizomes are planted in 15cm deep pits in the zone of natural occurrence. The seeds germinate in about 3 years but if sowing is done in bores at low altitudes, it can germinate in 6 months, then the seedlings can be taken to sub alpine region and transplanted.	The rhizomes are collected when fully developed.	Roots and rhizomes are considered hepatic, stimulant, cholagogue, purgative alternative and bitter tonic. The resin or podophyllin is a drastic purgative and produces copious watery stool and is given with Belladuna and Hyscyamus to avoid griping.
<i>Picrorhiza kurroa</i>	It is easily propagated by planting rhizomes in 15 cm deep pits at a spacing of 60cmx60cm during Nov.-Dec.	Collection is done after 3-5 years when rhizomes are fully developed.	Roots are used as stomachic, tonic, improve appetite and stimulate gastric secretion
<i>Swertia</i>	It is propagated by sowing of	Harvesting is done	The dried plant yields drug

<i>chirayita</i>	seeds in patches at a spacing of 30cmx30cm during Feb.-March.	in following November-December.	used as tonic, stomachic, bronchial asthma and liver disorders.
<i>Valerina wallichii</i>	The species is propagated by direct sowing or planting rhizomes in 15cm deep pits at escapement of 30cmx30cm during Feb.-March. About 25-40 Qtls. of root stock is sufficient for one hectare.	Rhizomes are dug out after 3-5 years when fully developed.	Dried rhizomes are employed for hair and perfumes, as incense and in drugs for hysteria and nervous problems.
<i>Viola serpens</i>	The species is propagated by sowing or planting root suckers at a spacing of 15cmx15cm during June-July.	Flowers are collected in Feb.-March in low lying area and in April-May in higher reaches.	Used for lung trouble, eye and ear diseases. Also used as blood purifier
<i>Jurinea macrocephala</i> (Dhoop)	The species is propagated by sowing seeds and divisions of root stock at color level.	It occurs in the alpine pastures	Decoction of roots is given in colic and puerperal fever and bruised root is applied to eruptions

The distribution, description, marketing, uses and propagation techniques of various medicinal and aromatic plants are well defined in the book “Medicinal and Aromatic plants of Himachal Pradesh” by Dr. N.S. Chauhan, Former Prof. Department of Forest Products, University of Horticulture and Forestry Nauni, Solan.

The best time of collection is generally during dormancy.

8.13 Other Non Timber Forest Produce:

8.13.1 Gucchhi: Gucchhi is a highly valued morel mushroom that grows over wide swathes of the country side under Deodar or mixed coniferous forests. It grows in March or early April (depending upon the altitude) and is collected by local people (men, women and children) as soon as one is spotted. This has led to extensive free riding and consequently, gucchhi collections are said to be dwindling all over the state. Another reason for the decline is the manner in which the morel is collected. It is wrenched off the ground, possibly also yanking out the substrate mycelium as well. There is neither time nor patience to allow the mushroom to shed its spores. So the next crops are getting less and less.

If locals can be organized and trained to do two simple things, gucchhi might have a chance to bounce back. One, the species needs to be collected after it has shed its spores. This might vary according to weather and altitude, but the local people know when. Secondly, a simple training to get the collectors to use a blade to cut the mushroom stem (instead of yanking it out) is all that is needed to help the species recover. Of course to do this is apparently simple job, there is a need to find out some good NGO or trainers who can take up this with the collectors (who are numerous) and sort of organize them into monitoring collection methods as well.

The royalty or export permit fee rate on Gucci is high: Rs 10,000 per quintal. While a quintal of gucchhi is a lot and given the current market rates (between Rs 4500 to 6500/kg, App.), they might seem reasonable; but people are not tuned to paying such taxes on forest produce (agriculture income is tax free). This high rate is a reason why much of the gucchhi trade seems to have gone underground. There is, therefore, a need to review these export permit rates for gucchhi and bring about a more transparent system in its trade.

8.13.2 *Dioscorea deltoides*: It is propagated both through rhizomes and stem cuttings. In case of rhizomes it is propagated by putting the sprouting buds of the rhizomes in prepared soil, (March-April) in the rainy season (July- August). The plant prefers light sandy loam soils and a warm temperate climate, which permits a long growing season. The soil should be manure with old rotted leaf mould before planting. The plants are planted at a distance of 0.3 meter in rows spaces 0.6 meters apart and are provided with supports or dry branch stubs on which the vines can climb. The plants raised in spring and rainy season come up very nicely. Similarly, the plant can be propagated through stem cutting. In this case the new wood, which will not wilt, is divided into single node cuttings, consisting of a leaf with the auxiliary bud and a short portion of the stem. The cuttings are placed in coarse sand and watered immediately. They are shaded and protected from the direct sun. In about three weeks time the rooted cuttings are produced, which are then planted in the field.

8.13.3 Resin: The Chil forests exist in about 1.67 % of the total area of the Anni Forest Division. The Chil forest plays a vital role in the generation of revenue in this division. The very important produce resin is tapped from the Chil trees and the detail of resin tapping is given in Chapter II under Chil Working Circle.

8.14 Campaign for Conservation and Preservation of Endangered Species:

For conservation of medicinal plant wealth, sequential field surveys should be launched so as to assess the conservation status from time to time. Extraction of such species should be banned for such period as may be necessary to restock them. Further, following action is recommended for the endangered species.

- (i) Propagation of endangered species both in ex-situ and in-situ.
- (ii) Exploration of substitutes to save the endangered species from over exploitation.
- (iii) Compensation to the right holders and particularly to the people actually affected where the species are growing.
- (iv) To create public awareness amongst the local people to save the endangered plant species.
- (v) Such NTFPs should be given the due thrust and species yielding them should be included in the plantation programme.

8.14.1 Threats to *Taxus* and *Berberis*

- (i) Lack of inventorisation. We know next to nothing about the approximate number of trees of *Taxus wallichiana*, their regeneration status and their pockets of occurrence across the appropriate altitudinal zone in the division.
- (ii) This tree, though on the List of THREATENED TREES (IUCN, RED LISTING FOR HP), is not enumerated as part of the enumeration done in forests. There appears to be no nursery stock grown nor are there any efforts for planting this species in appropriate location.
- (iii) Though collection and export of *Taxus* leaves has been banned since 1994 and still continues, but there are reports of its illegal collection and export, either as it is or in the name of *Talis patra* (*Abies pindrow* leaves), which is permitted and under present regulations export of which can be allowed by the Panchayat Pradhan.
- (iv) *Taxus wallichiana* is a very slow growing tree and unless successful plantations of it are raised annually, in the long term, this tree will eventually disappear.

- (v) Berberis as one can see is being extracted in huge quantity. It is not clear how this is done, but there must be implications for soil conservation.

8.14.2 Urgent Action on *Taxus wallichiana*

- (i) There is an urgent need to locate pockets/distribution of this tree in the forests of Anni Forest Division, map these sites by using GPS and inventory the trees class wise.
- (ii) A suitable nursery to be identified and stock of *Taxus wallichiana* raised from cuttings (done in February using rooting hormones). One and half lakhs such cuttings to be raised in poly bags every year for the next 5 to 6 years. The nursery stock has to be retained for two and half to three and a half years in the nursery before planting out. Since this is a long term, cyclic affair with a long nursery period, it is important that cuttings are raised on the recommended scale annually. A planting schedule for *Taxus* can be developed after 3 to 4 years. But this must continue every year for a long time to come; across the next many future management plans.
- (iii) If we have sufficient well grown stock of *Taxus*, it is feasible to grow the live hedges with the species around our closed areas and also to encourage farmers to use this as a live hedge. Such practices that can be incentivized in suitable areas through payment for environmental services.

8.14.3 Action on Berberis Conservation

- (i) A study to answer the question raised must be commissioned soonest possible.
- (ii) A PAR (Participatory Action Research) study be undertaken to evolve and adopt and monitor non destructive ways of harvesting this species.
- (iii) Berberis should be raised in large numbers in nurseries, as it is a very versatile species for use in Bio-engineering.

8.14.4 Policy on Introduction of Medicinal Trees in Forests: It is now the state policy that in different plantations of the forest department about 30% of the trees being planted need to be of medicinal value and also native to the tract where plantation is being done. Planting of medicinal and aromatic plant will increase the biological/ecological value of the forest in undergrowth level as well as it will also help in breaking of monoculture. Beside this it will also help in controlling the soil erosion in the plantation areas. There is thus a need to identify and grow suitable medicinal trees for different altitude zones in a particular forest division. While most trees may be technically “medicinal”, it is important that species like Deodar, kail, Chilgoza etc. which are normally grown in forest plantations are not reckoned as medicinal trees. It is important that the species like Walnut, Bird cherry, Hazelnut, Horse Chest Nut etc, need to be grown in nurseries.

8.15 Other regulations:

8.15.1 Legal Measures: The export of NTFP is regulated under the Himachal Pradesh Forest Produce Transit (Land Routes) Rules, 1978. The season for extraction and collection of NTFP is from the mid of September till snowfall and export is generally completed by the end of the December in each calendar year. The transit rules framed by the State Govt. under Section 41/42 of India Forest Act, 1927 shows that the rules are intended for regulating the movement of forest produce by land routes into “from and within the territorial limits of the Himachal Pradesh”.

Rules 5 provides for registration of property marks and its use with regard to forest produce whenever a person wants to transport or cause to transport such forest produce.

Rule 6 deals with registration of property and its use. Rule 8 provides for issue of certificate of registration. Rule 9 fixes the validity period of registration certificate. Rule 10 deals with issue of pass for export or transport of forest produce. It provides that no pass shall be issued for any unmarked timber or for such timber as bears the marks not registered as provided therein.

Rule 11 deals with prohibition on transport of forest produce. Rule 14 provides for production of pass challan for examination. Rule 16 provides for seizure of forest produce and other articles etc. Rule 17 provides for exemption to right holders from obtaining a pass. Rule 18 imposes a ban on booking of forest produce by rail.

Thus, the transit rules framed under Section 41 of Indian Forest Act, 1927 applies to the private forests as well as forests grown by private individuals also and as such any transit of such forest produce requires transit pass for movement. It merely provides for a license for removals of timber or other forest produce from or within the state and also for setting up or establishing a trading depot within the state.

Section 42 deals only with penalty for breach of rules made under Section 41 of the Act.

Local people/right holders have recorded rights to collect fruits, edible seeds, medicinal roots and leaves, roots for the preparation of dyes and honey for their own use and for sale of forest product free of cost as per the recorded rights given in Forest Settlement Report by Anderson. This means that right holders can avail the facilities only from the forest in which they have recorded right subject to condition that forest produce can be used for domestic purpose free of cost and forest product can be sale in open market only not forest produce collected from the forest as per recorded rights in Forest Settlement Report, by Anderson. Therefore, Divisional Forest Officer may take up the matter with the Government to notify for fixing of quantity of forest produce to be collected by right holders for domestic use so that malpractices or over-exploitation of NTFP could be checked and controlled.

In practice the traders purchase the medicinal herbs and shrubs from the rights holders and transport the same to the Amritsar, Chandigarh and Delhi & other markets of demand after obtaining export permits from the concerned Divisional Forest Officer under the H.P. Forest Produce Transit (Land Routes) Rules, 1978 by payment of rates as prescribed by the State Govt. from time to time.

8.15.2 Fire Protection: The whole working cycle will be under strict vigil against fire hazard. The floor should be kept clean of inflammable material such as debris, unwanted bushes, weeds and grass etc. and adequate fire watchers should be employed.

8.15.3 Right Holder's Demand: Demand of right holders for medicinal plants, herbs and shrubs will be met from the forest in which they have recorded rights. These rights shall be exercised by the right holders to meet the demand of domestic purpose free of cost whereas for commercial purpose, the species shall be extracted from the prescribed area only in the approved extraction cycle by the competent authority and that the extraction shall be done in sustainable manner and has not to be caused any ecological or environmental damages under the supervision of Forest Guard concerned. Non-adherence to the above condition shall debar the collection and extraction of NTFP from forest by DFO after giving prior show cause notice to the right holders/traders under the principle of natural justice read with the provision of Indian Forest Act, 1927 besides criminal proceeding under the provisions of Indian Forest Act read with Indian Penal Code.

8.16 Issues and Challenges:

8.16.1 High Exploitation and poor regeneration: Due to unrestricted collection, over use of products and scientific collection and also rapid deforestation for non forest use, the natural availability of NTFP producing trees are less in No's and their regeneration in many forest area has gone down.

8.16.2 Inadequate NTFP base line data and mapping: For national level planning and management revival data base on NTFP is required which however, is not available properly to determine quantity available, collected, self consumed value added and traded, mature trees available and their production potential, per hac. No. of trees. Etc. Since, NTFP collection are seasonal and may vary from year to year (though the average size of dependent population may remained more or less same quite for some time) It is difficult to provide demand and specific forests types, mapping/inventorization through GIS system is to be developed.

8.16.3 Poor attention to NTFP conservation: In-situ & ex-situ conservation, identification of genotype and genobank, application of biotechnology and genetic engineering are either paid less attention or totally absent in NTFP sector.

8.16.4 Volatile Market: NTFP market is highly diverse, and fluctuates quite frequently, hence intervention based on assumption market stability or expectation of stable/growing market often become non-viable commercially. This discourages private entrepreneurship in the sector so far commercial farming is concerned. Primary collector and producer get leased share from their hard earned on product. So there is need of MSP from Govt. side.

8.16.5 Adapting to climate change: Climate change is global phenomenon i.e. affecting the phonology and reproductive biology of various trees, shrubs and herbaceous plant species. Various research data suggest change in temperature and rain fall pattern effecting the NTFP production- qualitatively and quantitatively and which will in term affect the dependent economy of local people. Suitable strategies required understanding the level vulnerability and adaption measure in future.

8.17 Assessment of major NTFP Species:

Anni Forest Division has a very rich floral and faunal diversity due to its topographical, climatic and edaphic variation. As discussed in the succeeding paras, large quantities of NTFP are extracted and exported by the local inhabitants of the tract of the Divisional on account of their recorded and forest settlement. Due to increasing subsistence as well as commercial expectation from NTFP, it has become necessary for the Forest Department to assess the carrying capacity of imported medicinal herbs, shrubs and other NTFP Species for its sustainable harvesting.

In Anni Forest Division the NTFP is increasingly recognized for their crucial role in rural livelihood, bio-diversity conservation and export earnings. In order to cattle the increasing level of subsistence as well as commercial needs of the major species involved in NTFP sector, more intensive management and extraction of NTFP has become mandatory. This necessitates more careful assessment of carrying capacity major NTFP species like Aesculus seed, Lichens, Talis patra, Dora grass & Pathanbel etc. as well as devising sustainable harvesting system besides the four year extraction cycle which in vogue in this Division. The local stack holder has also started responding to this concern at various level. Several imitative to ensure sustainable management of NTFP have already been started within the frame work of community forestry.

8.17.1 Resource assessment and harvesting: Perusal of the information of Anni Forest Division with regards to collection and export of NTFP for the lapse 20 year as given in the table No. 1.9 of Part –I of the current plan, reveals that large quantity of NTFP are being extracted and exported from this reason. The major species like Khanor seed, the tree of which exist in nallas on higher ridges is being extracted include method and exported through the contractors. Similarly the other major species are also being extracted on very crude method and that too through contractors, resulting in degradation/extinction of these species in this Division. No proper assessment of the species has been carried out in the past which is required to be developed for proper management of the species. The local communities are also required to be educated with regard to the sustainable harvesting techniques, method and tools to be utilized for extraction of major medicinal NTFP.

The assessment process to be followed is given below:-

- Preliminary mapping
- Boundary surveying
- Sampling and measurement
-

8.17.1.1 Estimation of sustainable Harvest level: Using the data from inventory and available secondary sources (on growth rate etc.) sustainable yield is required to be ascertained. During the course of field survey the assessment and carrying capacity of the follow major species were carried out for the last 20 years as given in the table No. 8.6

Table No. 8.6

Sr.No.	name of Species	Scientific Name	Total Qty. Exported (In qntl.) w.e.f 1999-2000 to 2019-20)	Average per year (in qtl.)
1	Chholora	<i>lichens</i>	1659.16	82.958
2	Dori Grass	<i>Potentilla nepalensis</i>	799	39.95
3	Khanor	<i>Aesculus indica</i>	569.65	28.4825
4	Talis patra	<i>Abis webbiana</i>	258.51	12.9255
5	Pathanbail	<i>Coleus aromaticus</i>	184	9.2

Perusal of the above table reveal that Chhalora is the major species being exported from this Division and average per year is about 83 Quintal, followed by Dori grass. The result of the major NTFP Species were analyzed to assess the effect of harvest interval in the Division. It was concluded that the four year cycle does not hold good for all the medicinal plants. The yield will increased in the 5th year but that is also not significant. Based on this, harvest interval of 5 year is recommended for extraction of medicinal herbs, shrubs and other NTFP species. The Divisional Forest Officer, Anni is to carry out the detail study about the extraction of other major species enlisted in the table above during the plan period.

In addition to this rapid assessment, five year monitoring study is also suggested for timber harvesting season, harvest interval and harvesting method for rhizomes, roots, leaves and seed of Khanor.

8.17.1.2 Available carrying capacity.

The approximate carrying capacity of the major NTFP Species found in this Division is given in the table below.

Sr.No.	Name of Species	Scientific Name	Approx. area in which the species is found. (in hac.)
1	Chholora	<i>lichens</i>	1500
2	Dori Grass	<i>Potentilla nepalensis</i>	1100
3	Khanor	<i>Aesculus indica</i>	1200
4	Talis patra	<i>Abies webbiana</i>	500
5	Pathanbail	<i>Coleus aromaticus</i>	450

8.18 Strategy:

The NTFP management on sustainable basis has remained a complex process for the last several decades but in the present scenario, there is need to adopt multipronged strategy as under to build up the an environment to strengthen community based management of the trade of NTFP which in turn would strengthen the livelihood of poor forest dependent population.

- i. **Resource Augmentation plan/incentive for growing crops in the private land:-**
Due to unrestricted and unscientific and over use of products of NTFP resources have greatly been depleted during past year while their regeneration in many forest area has gone down. Special efforts is required for reducing the pressure on forest by cultivating selected species outside forest area and undertaking intensive conservation of existing forest supported by ANR and other conservation activities. The increased production thereby would not only produce the gap between demand and supply but also shall become the gourd for sustainable NTFP development.
- ii. **Detail inventory and prioritization of zone wise species**
India has got very rich bio-diversity. Hundred of NTFP species are of medicinal value and are in active trade. While the knowledge and data base on all species are needed, a gradual process of understanding and developing management programme would be appropriate and therefore, there would be a high need zone wise inventory and prioritization of various NTFP basis.
- iii. Forward and backward linkages /organization of existing trade.
There is a need to involve financial institution to promote community based micro enterprises with clear benefits sharing mechanism. Involve financial institutions like NABARD and other public sector banks NTFP enterprise development.
- iv. Capacity development training, awareness building exposure
Skill/ capacity development is very important for the Foresters (particularly the subordinate's field staff) to successfully face emerging challenges of accommodating community rights in Forest conservation, ensuring bio-diversity conservation and managing climate change.
- v. Food security and income generation for poverty alleviation
For empowerment of community and sustainable Forests, symbiotic relationship between forest and forest dwellers must be maintain in order to provide foods security

for forests dwellers and income generation for poor population. Women are mostly dependent on NTFP.

- vi. Quantity, collection procedure, processing and local selling.
In order to improve upon the subsistence level, programme supporting to ensure food security would be require with specific concern for the landless, hunter gatherers and primitives tribes.
- vii. Research and development
More revolutions in NTFP sector are possible through successful R&D initiatives. Special R&D drives is required to develop marketability for low value and high volume items and also for alternate marketability for presently single market items. R&D focus is also to developed NTFP, silviculture, sustainable harvesting protocol, low cost and user friendly (preferably women friendly) value addition technic and processing mechAnnisms, eco friendly and safe storage method.
- viii. Esablishment of an apex body for NTFP development.
The overall development in NTFP sector, despite its vast protencial have not been a priorarity in the past. To development NTFP sector in a holistic way by coordinating/guiding variouls Govt. Sponsered activity/programme on the same alongwith managing knowledge, developing package, ensuring capacity development of stack holders and providing overall guidencein the NTFP secto would be very much required. This agency may be called the NTFP development board and can have its stage offices and branches.

CHAPTER IX

THE FOREST PROTECTION (OVERLAPPING) WORKING CIRCLE

9.1 General Constitution:

This Working Circle includes all forests which overlaps with other Working Circles and is constituted to address the forest protection problems like Fire, Illicit felling, Encroachment, boundary pillars, Illegal mining and Poaching etc. The forest areas which are vulnerable to encroachments, status of damage reports, progress in prosecution/ compounding, disposal of seized timber and illicit felling etc. along with their future strategies are also discussed in detail under this Working Circle. This Working Circle is overlapping Working Circle which includes other land as defined by the Supreme Court also.

9.2 General character of vegetation:

The forests allotted to this Working Circle have their scattered distribution throughout the tract; hence they represent almost all the forest types starting from scrub in lower elevations and high lying forests which extends upto higher elevation. These types are described in detail in Chapter-II of Part-I and briefly under the different Working Circles constituted under this plan.

9.3 Special objects of Management:

The special objects of management of the forest allotted to this Working Circle are:

- (i) To protect all the forests and other valuable broad leaved forests from all types of forest offences, including indiscriminate exploitation and to preserve eco-systems of the region.
- (ii) To protect and conserve all forest land to ensure no illegal mining, encroachment and non forestry activities on forest land under the provision of Indian Forest Act, 1927, HP Mines & Mineral (Concession) Revised Rules, 1971, Mines & Minerals (Development & Regulation) Act, 1957, Forest (Conservation) Act, 1980, HP Land Revenue Act, 1954 and HP Public Premises & Land (Eviction & Rent Recovery) Act, 1971 etc.
- (iii) To address the problem of forest fire to the best possible extent by adopting the legal measures and other preventive measures under the provision of Law i.e. IFA, 1927, IPC and Prevention of Damage to Public Property Act, 1984.
- (iv) To provide protection of Wild life against poaching/hunting under the Wild Life (Protection) Act, 1972 to ensuring the ecological and environment security of the tract.

9.4 Illicit Felling:

9.4.1 General: Though organized and large scale illicit felling in this division is very few and that too, has been halted by various administrative and legislatives measures, but major cases of illicit felling occasionally still do occur in Chowai Range of Anni Forest Division. Open forest wealth is easily accessible to every person in the upper hill region especially nearby road side, as boundaries between private and Govt. forests are not well defined and destroyed the forest wealth to the large extent despite of steps taken by the forest field functionaries. Illicit fellings of trees by some unscrupulous persons is another factor responsible for damaging the forest property. The details of cases of illicit felling of trees detected for the period 1996-97 to 2019-20 is tabulated in table No. 9.1

Table No. 9.1

Year	Opening Balance			Cases detected during the year			Total Cases			Cases Disposed off during the year				Cases pending at the close of the year		
	Balance cases of previous year	No. of Trees	Vol.	No. Of Cases	No. of Trees	Vol.	No. Of Cases	No. of Trees	Vol.	Departmentally Compounded/ FIR Lodged		By Court/Challan				
										No. Of Cases	Vol.	No. Of Cases	Vol.	No. Of Cases	No. of Trees	Vol.
1996-97 to 2004--05	Data not available															
2005-06	61	-	28.06	70	-	15.232	131	-	43.292	62	12.454	-	-	69	-	30.838
2006-07	69	-	30.838	71	-	94.168	140	-	125.006	47	5.78	-	-	93	-	119.226
2007-08	93	-	119.226	83	-	12.956	176	-	132.182	95	20.9	-	-	81	-	111.282
2008-09	81	-	111.282	79	-	14.497	160	-	125.779	97	110.386	-	-	63	-	15.393
2009-10	63	-	15.393	73	-	80.292	136	-	95.685	80	85.094	-	-	56	-	10.591
2010-11	56	-	10.591	50	-	8.382	106	-	18.973	45	4.489	-	-	61	-	14.484
2011-12	61	-	14.484	62	-	138.534	123	-	153.018	85	142.573	0	0	38	-	10.445
2012-13	38	-	10.445	59	-	17.497	97	-	27.942	35	4.918	0	0	62	-	23.024
2013-14	62	-	23.024	21	-	4.838	83	-	27.862	26	10.43	1	2.21	56	-	14.858
2014-15	56	-	14.858	56	-	9.733	112	-	24.591	29	5.895	0	0	83	-	18.696
2015-16	83	99	18.696	60	70	12.196	143	159	30.892	93	22.36	0	0	50	50	8.1
2016-17	50	50	8.1	19	22	8.852	69	72	16.952	40	4.112	0	0	29	33	12.84
2017-18	29	33	12.84	2	23	2.57	31	56	15.41	3	2.71	0	0	28	33	12.7
2018-19	28	33	12.7	3	3	2.54	31	36	15.24	3	2.54	0	0	28	33	12.7
2019-20	28	33	12.7	2	2	4.11	30	35	16.81	2	5.67	0	0	28	33	11.14

As per Indian Forest Act, 1927, any act causing damage by negligence or deliberately felling of a tree or breaking of land or clearing of land for cultivation or any other purpose in 'Protected Forest' etc., is an offence and punishable with imprisonment for a term may extend to two years or with fine up to five thousand rupees, or both.

Sub section (3) of Section 2 of Indian Forest Act, 1927 defines the term "Forest Offences" to mean an offence punishable under the Indian Forest Act or rules made there under. Nature of forest offence is varied. There may be serious aggravation of offences perspective of money value involved and similarly, criminal intent behind the offence may not be that serious as compared to the damage caused for forest ecology and environment. There are two types of forest offenders that one comes across. A section of the poor people and forest dwellers i.e. right holders who break the law and rules to keep up their livelihood and to meet their basic needs. The other class of forest offenders belongs to a chain of criminal's e.g. forest mafia, encroachers or Company or Corporate bodies or Contractors who knowingly break the law and rules and commit forest offences to meet their illegal ends through innocent people, tribal's, Nepali mazdoor and villagers etc.

9.4.2 Causes of Illicit Fellings: These are briefly enumerated as under:-

- i. With ever increasing human population and urbanization of tract of Anni Forest Division, the demand for constructional timber, fuel wood and agricultural implements have increased manifolds. That is why some people indulge in illicit felling to satisfy their needs if their demands are not met with judiciously.
- ii. Poor economic conditions of forest dwellers have compelled them to resort to illicit felling of trees who further sell timber to wood smugglers and other persons or building contractors to earn their livelihood.
- iv. Installation of imported timber depot, Saw Mills, furniture Industry and failure of the department to fulfill their requirement, sometimes, leads to illicit fellings in the forests. The detail of Imported Timber Sale Depot, Saw Mil, and Furniture House/Joinery is given in the *Appendix No XLVI, XLVII & XLVIII respectively*.
- iv. Tremendous increase in market price of timber of various species has brought the element of greed in the minds of unscrupulous persons to become millionaire over night. As such illegal timber traders do not spare any pains in felling of trees illegally through innocent villagers.
- v. Due to unemployment, youths are also indulging this illegal timber trade and to make their source of income with the help of forest mafia etc.
- vi. Local inhabitants resort to such illegal activities to increase their land holdings by way of encroachments and raising apple orchard and cultivation by potatoes and vegetables.
- vii. Deodar is the most important species occurring in this tract from economic point of view. It fetches the highest prices in the market of all the species that occur in this area.

9.4.3 Modus operandi of Illicit Fellings: Trees are usually cut flush to ground. Axe and Hand Saws are generally used for fellings and conversion of trees. Sometimes habitual offenders do this malice act in well planned manners, they either remove or burn the illicitly felled stumps and felling refuses to destroy spot evidences. They occasionally cover the stumps with earth or burn the stumps to deceive the forest officials.

They generally fell class-III, IIA & IIB trees and rarely I Class and above trees and convert them into non-standard sizes to facilitates the manual carriage of timber to vantage points within minimum possible time. Timber is sold to various contractors, wood based industries or local people who need more timber to house construction and hotels and rarely exported illegally outside the district, Anni.

9.4.4 Forests area prone to illicit Fellings: Based on the field observation and record of illicit felling, following forests area are prone to illegal felling/cutting of trees which need effectives protection and measures is tabulated in table No.-9.2

Table No.-9.2

List of Forest areas Prone to Illicit Felling

Sr .No.	Name of Range	Name of Block	Name of Beat	Name of Sensitive Forest	Compar tment No.	Area In Hac.
1	Arsu	Nirmand	Pujarli	1/3 Ramgarh Kandi C-III	C-III	41.28
				UPF Kathanda C-12	C-12	186.15
				UPF NishAnni C-16	C-16	60.7
		Arsu	Tharvi	UPF Tharvi C-27	C-27	99.14
				UPF Pakora	C-26	283.28
				2/10 Mool		219.34
		Kharga	Sarga	UPF Sarga	C-34	68.8
			Kindla	UPF Kushwa	C-36	186.15
		Sarahan	Tharla	1/5 Kandushilla	I(a)	16.19
				1/5 Kandushilla	I(b)	8.9
				1/5 Kandushilla	II(a)	12.14
				1/5 Kandushilla	II(b)	9.71
				1/5 Kandushilla	IV	33.59
				UPF Baswari	C-2	352.07
			Juagi	1/4 DradRheuns		540.67
			Sarahan	R/3 Jajuth	II	111.69
				UPF Sarahan	Ist	182.1
				UPF Sarahan	IIInd	149.73

[illegible]

3	Nither	Dalash	Dalash	DPF 1/18 Buhan	C-II	19.21
				UPF Sarli	C-56	242.81
				UPF Soidhar	C-55	137.59
				DPF i/17 Gohan	C-I	13.76
					C-II	12.14
			kandagai	1/24 Shilla	C-I (a)	14.57
					C-I (b)	20.233
					C-II	12.14
					C-III	45.32
		Margi	Katmore	UPF Khalir	C-68	153.77
			Margi	UPF Tandi	C-69	174.02
				UPF Ishwa	C-67	292.31
		Nither	Sarahar	1/14 Marahkod	C-I	40.47
					C-II	50.47
					C-III	54.23
					C-IV(a)	55.04
					C-IV(b)	45.32
				1/15 Lot Kayon	C-I	21.45
					C-II	22.26
					C-III	16.19
				UPF Shah	C-88	334.71
				U{F Shedri	C-75	392.54
				UPF Duraha	C-80	499.7
			Tandi	UPF Tandi	C-57	404.68
			Nither	UPF Jalori	C-81	89.03
				UPF Sharthi	C-82	203.97
				UPF Chebri	C-83	267.09
				1/16 Shilla	C-III	52.2

(Source : Records of Arsu, Chowai & Nither Ranges)

9.4.5 Preventive/Remedial measures:

1. **Requirement of right Holders:** Genuine demand of local right holders for timber, fuelwood etc. should be met with without any unreasonable delay so that they may not resort to illicit fellings.
2. **Plantation of fuel/fodder species:** Sincere efforts should be made to raise fuel and fodder species near the habitation so as to reduce pressure on valuable forests.
3. In-charge of sensitive beats may be assisted by forest worker, while patrolling the various forests.
4. **Intensive Patrolling/Inspection of Forests:** All Forest Guards must patrol the forests falling in jurisdiction of their respective beats regularly to avoid any chance of illicit fellings. Range Officer & Block Officer is equally responsible to prevent large scale illicit

fellings in their respective jurisdiction and they should check all the sensitive forests periodically. Similarly, ACF should check all sensitive forests at least once in a year to plug any loopholes left by subordinate staff. Divisional Forest Officer himself should review the progress of detection of forest offences regularly and inspect the forest area prone to illicit felling once in a year.

5. State Vigilance or police officer is required to be exercised on various developmental agencies working in the vicinity of forests, especially when building and road construction is involved.
6. Frequent checking of saw mills and wood based industries are indispensable to prevent illegal trade of timber.
7. DFO/ACF/R.O. must conduct night raids/Nakas to check illicit export of timber or their forest produce outside the division.
8. To check the illegal trade of timber within the division, three more check posts, on National Highway must be created through NPV budget or through Tribal Sub Plan budget during the first two years of Working Plan period.
9. To check the illegal trade of timber and poaching, patrolling staff/R.O must be provided vehicle, mobile phone and gun etc.
10. Whenever a complaint is received by the staff by any means whether orally, telephonically or in writing, whether by name or anonymously or pseudonymously the preliminary enquiry shall be initiated immediately and completed within two weeks if a forest offence is found to have been committed. Damage report shall be issued immediately and action shall be taken by following the rules and procedure. Major cases of illicit felling should invariably be registered with police immediately.

9.4.6 Prosecution of forest offences: The cases of petty nature may be compounded or challaned in the court of law under the provision of Indian Forest Act, 1927, but the case involving large scale felling aggravate with Criminal offence under the provision of Indian Penal Code be registered with the Police. The first information report under Section 154 of Cr. PC is that information which is given to the police first in point of time, on the basis of which, investigation commences and relates to a cognizable offence. Non cognizable offences cannot be investigated by the police without the special order from a competent Magistrate, when a police officer receives information of a non-cognizable offence committed within the limits of his police station, he enters the substance in a prescribed book i.e. “Roj Namcha” daily diary report and refers the information to the Magistrate. When the Police Officer receives the order from the Magistrate to investigate the case, he may exercise the same power in respect of investigation as in cognizable offence.

For the purpose of the Criminal Procedure Code all the offences have been classified into different categories but the code has not given any guidelines to determine whether a particular offence belong to one category or the other. It all depends upon whether it is shown as cognizable or non cognizable in the 1st schedule of the code. That schedule refers to all the offences under the Indian Penal Code and puts them into the cognizable and non-cognizable categories. The offences under the laws other than the Indian Penal Code which are punishable with imprisonment for three years or more have been in the 1st schedule as cognizable and those punishable with less than three years have been shown as non cognizable. This rule is of course subject to any rule to the contrary provided in that law. In case of a cognizable offence a police office can arrest the accused person without any warrant or authority issued by a Magistrate and can investigate into such a case without any order or direction from a Magistrate under Section 156 (I) and 157 of Cr. P.C.

In the case of forest offences under the Indian Forest Act, 1927 or any other special law all those that are punishable with imprisonment of less than three years or with fine only, are bail-able/non-cognizable offence unless there is a provision to the contrary. Hence all forest offences are non-cognizable-bail-able offence as at present.

Proceeding in a non-cognizable offences start by means of a complaint addressed to a Magistrate, whereas, no complaint needs to be made in the case of cognizable offences. In cognizable offence Police begins the investigation on getting information of the crime under Section 154 read with Section 156 of Cr. P.C. Section 2 (d) of Cr. P.C 'Complaint' means any allegation made orally or in writing to a Magistrate, with a view to his taking action under the code, that some person whether known or unknown has committed on offence but does not include a police report.

Therefore, the position with regard to forest offences under Indian Forest Act is that they are non-compoundable under the Criminal Procedure Code and treated as complaint cases under chapter XV of Cr. P.C. And under Section 68 of Indian Forest Act, all offences except those falling under Section 62/63 are declared as compoundable offence. Composition of forest offences is on a different footing and it is clearly distinguishable footing from the compounding of offences punishable under the Indian Penal Code as mentioned in Section 320 of Cr. P.C.

As per State Govt. instruction, it is the duty of every beat Guard to take cognizance of a forest offence committed to issue the damage report (DR) under Section 33 of Indian Forest Act, 1927 get the damage accepted by the offender also to seize the forest produce and the implements used in committing the offence. The forest offence cases can either be compounded by the forest officer himself or if he is not competent to compound the cases be registered with the police or prepare challan and put in court for prosecution under the provision of Indian Forest Act, 1927. If the offence is committed on non-forest land i.e. Govt. land other than Demarcated Protected Forests, Damage report shall not be issued under Section 33 of Indian Forest Act, 1927 and FIR shall be registered with the police by involving the provision of Indian Penal Code only and to take cognizance of offence which has been committed.

The Indian Forest Act is not self sufficient for dealing with all legal problems relating to forest protection and conservation of forests. So it becomes quite often necessary to invoke the provision of the Indian Penal Code along with Indian Forest Act, 1927. Any Forest or Police Officer may without orders from a Magistrate and without a warrant, arrest any person in any forest offence punishable with imprisonment for one month or upwards under Section 64 of the Act provided that nothing in this section shall be deemed to authorize such arrest for any act which is an offence under Chapter-IV unless such act has been prohibited under clause (C) of Section 30 of the Act Meaning thereby arrest of offender cannot be made for the offences committed in protected forests in absence of notification under clause (C) of Section 30 of the Act.

Every officer making an arrest under sub section 2 of Section 64 shall, without unnecessary delay and subject to the provision of this Act as to release on bond take or send the person arrested before the Magistrate having jurisdiction in the case or to the office in-charge of the nearest Police Station. If there is reason to believe that such person comes under the provisions of Section 41 of Cr. P.C, a Police officer shall re-arrest him under Section 43 of Cr. P.C but no police officer or forest officer shall detain in custody a person arrested without warrant for exceeding twenty four hours exclusive of the time necessary for the journey from the place of arrest to the Magistrate's court under Section 57 of Cr. P.C. No person who has been arrested by a police officer shall be discharged except on his own bond, or on bail or under the special order of a Magistrate.

9.4.7 Compounding of Forest Offences: Under Section 68 of the Indian Forest Act, 1927, the Conservator of Forests are empowered to fixed the rates of compensation for compounding of various forests offences vide H.P. Govt. notification dated 5-5-2010. The Forest field staff should act immediately as per instructions issued from Pr CCF H.P. in this regard and within the time frame.

9.4.8 Disposal of Forest Offences: It has been observed that in spite of instruction issued from time to time by the Govt. due care is not taken regarding prompt and timely disposal of forest offence cases. The cases are not being challaned in the court of Law within the limitation period under Section 468 of Cr. P.C with the result that the accused even in serious forest offence cases involving property worth lac of rupees are being acquitted simply on the technical ground of limitation and non production of certified copies of notification under Section 29, 30/31 of Indian Forest Act, 1927 as required under Section 78 of the Evidence Act, 1972, which is not desirable.

In order to avoid any such recurrence in future, it is hereby laid down that the following procedure will be followed for disposal of the forest offence cases:

- i) It is the duty of every forest guard in beat to take cognizance of a forest offence which has been committed or is suspected to have been committed or is about to be committed. A report to the effect should be issued damage report immediately giving the date of occurrence, time of offence, name and compartment of forest, detail of damage, name, age and address of offender and name and address of witnesses, if any.
- ii) In case repeated offence in the same year, reference to previous damage reports should be given.
- iii) The report should be prepared in triplicate. In case a witness is not available on the spot, circumstantial evidence to be collected through photograph or video film in presence of the offender and the offender must be taken to the nearest village Lambardar or Panchayat authority or any influential person or reliable person of village in whose presence the arresting officer will make a report of the offence committed and got the report witnesses.
- iv) The implements and the forest produce may be seized immediately at the time of arrest and will be placed in the custody of the Lambardar or any other reliable person near the place of offence under a proper receipt in the form of a SpurdNama or seizure memo etc.
- v) If the offender admits the commission of the offence and express his willingness to compound the offence without being challaned in a court of law, he should be required to put signature or thumb impression on the 'Iqbal nama' printed on the back of the damage report which should be got witnessed by two independent witnesses.
- vi) Thumb impression or signature on the 'Iqbal nama' should be taken even if the offender merely admits the commission of the offence and yet is not willing to compound the offences under Section 68 of the Act in the presence of witnesses.
- vii) In case where the identity of an offender is not known to the Forest Officer, it is his duty to arrest him, seize implements or tools used in the commission of offence including mobile phone etc. as well as forest produce and take him to the village Lambardar or Panchayat authority or in his absence any respectable or reliable person with a view to establishing his identity. After ascertaining his full particulars the normal procedure prescribed above should be followed.
- viii) In a case where the offender has escaped arrest on the spot an immediate report will be made and got signed by the nearest Lambardar or an influential person or reliable person. The implements or tools or the forest produce seized will be entrusted to "Sapurdar" and efforts will be made to trace the offender. If the offender admits commission of the offence in his 'Iqbal nama' or restrain to discharge his duty should be taken in the manner described above. In case an offender refuses to sign the 'Iqbal nama' he must be prosecuted through the Police and complete details of such case should be furnished to the

police officer concerned for investigation. Wherever possible the Range Officer will release the offender on bond to appear, if and when so required, before the Magistrate or before the officer in charge of the nearest Police Station under Section 65 of Indian Forest Act.

- ix) Where an offender resists arrest, the nearest police officer or right holders may be called upon to render necessary assistance under Section 79 of Indian Forest Act, 1927.
- x) The Police help may also be sought in case of aggravate of criminal offence or serious offences under the Indian Forest Act involving prolonged investigation. All cases of assault on departmental forest official or officers in the course of discharge of their official duties, voluntary causing of hurt to commit a forest offence, abetment of forest offence, criminal trespass, mischief by fire and injury to public property, giving false evidence, concealing offenders and forest produce, counterfeiting trade or property marks, selling goods marked with counterfeit trade mark or property mark and tempering with property mark with intent to cause injury or damage, theft of timber through organized fellings and damage to public property through setting fire etc or arrested person should be reported to the police for action under the Indian Penal Code read with IFA, 1927 or any other law applicable to the case. It is also emphasized that no premises can be searched without a search warrant either from the Conservator of Forests or DFO or from the Magistrate having jurisdiction.
- xi) Any damage report issued by a forest guard should be reported to the concerned Deputy Ranger within 48 hours and reported to Range Officer concerned within 3 days and thereafter within 4 days to the DFO concerned. If the matter is reported, it is the responsibility of the Forest Range Officer/ACF/DFO to take further action or otherwise in case of failure for the same field functionaries are responsible for lapses under H.P. Preservation of Specific Corrupt Practice Act, 1983 and CCS (CCA) Conduct Rules, 1965.
- xii) Forest Guards and other concerned staff shall maintain a daily diary report on the lines of the “Rojnamcha” maintained by the Police department, where they should record the events of the day, the forest/village visited and observation made or reports received. This daily diary should be inspected and maintained by the Block Officer and sent a fortnightly report to Range Officer concerned and Range Officer/ACF/DFO should inspect the daily diary of the forest guard and Van Thana staff when the jurisdiction of the respective forest guard.
- xiii) On receipt of the damage report, the Range Officer will enter them in the Damage Report Register. In entering them he will ensure that the continuity of serial number of a damage report of beat is maintained and no damage report is missed or tempered. On the damage report itself the serial number of the ‘Damage Report Register’ will be filled. One copy of the damage report will be retained in the Range office and field by beats for record.
- xiv) The Range Officer is responsible to see that the damage reports are either compounded or taken to court and filed (with Divisional Forest Officers sanction) within six months of the commission of the offence.
- xv) The register of cases compounded with the Range Forest Officer will show the disposal of each case. The disposal of each case will either be compounded or prosecuted or filed. In each case of the DFO sanction will be quoted. In the case of prosecution, a cross reference to the prosecution report will be given.

- xvi) In complete or defective damage reports or tempered D.R. which can neither be compounded nor can be taken to court will be filed or written off by the DFO with prior concurrence of Conservator of Forests provided that he is satisfied about error of judgment on the part of the beat guard and Deputy Ranger etc.
- xvii) At the close of the financial year all undecided damage reports will be brought forward in red ink in the register of offences compounded with the Range Officer and dealt with in a normal way.
- xviii) The compounding of offences under Section-68, the compensation in all such cases must be realized within a period of 3 months of the commission of offences. In cases the offenders is/are not willing to compound the cases for which his/their statements must be recorded in presence of two independent witnesses. The cases should then be challaned in the court of law before the 6 months or expiry of limitation period under Section 468 of the Cr. P.C. However, all challan must be submitted by the Range Office to DFO for according sanction for the commission of offence.
- xix) The ACF will scrutinize the cases with the help of ADA (Assistant District Attorney) and enter the same in the Divisional prosecution register before these are put to DFO for his sanction. Thereafter these cases will be challaned in the court of law under the signature of the RO/DFO concerned.
- xx) The cases must be put in court before the expiry of 6 months period positively or before the expiry of limitation period under Section 468 of Cr. P.C, failing which the responsibility for delay will rest with concerned Range Officer (whatsoever delays the prosecution of cases) who will be personally responsible to make good the loss of Government.
- xxi) All FIR of forest offences under Section 154 of Cr. P.C issued by the Police officer may be sent to DFO within 3 days from the date of issuance of the FIR and should immediately entered in the damage register maintained in the Range Office.
- xxii) The Public Prosecutors have been entrusted the job of prosecuting the forest offence cases. However, Dy. Ranger or Range Officer should assist the Public Prosecutor in conducting the forest offence case in CJM court and ACF should assist the Deputy District Attorney or District Attorney in District and Session Judge Court. They will also keep the DFO and R.O's concerned and submits monthly progress report of the cases duly verified by the ADA/Dy. DA or DA concerned.

9.4.9 Indian Forest (HP 2nd Amendment) Act, 1991: Vide Indian Forest (HP 2nd Amendment) Act, 1991 certain changes have been made in the Chapter-IX of the Indian Forest Act, 1927 in order to check the large scale illicit felling and smuggling of forest produce particularly by engaging vehicle by certain unscrupulous person. The State Legislative in their wisdom amended the Indian Forest Act in many States in the country, creating another forum, namely the 'Authorized Officer' to order confiscation of property which is instrumental in the commission of forest offences. There was no provisions in the Act enabling the forest officer's to confiscate such timber or forest produce and implements or tools or vehicle etc. used for committing forest offences even in a case where he was satisfied that a forest offence had been committed. In view of this, the State Govt. necessary amendments have been made in Section 52 and after Section 52, inserted the provision of Section 52 A and 52 B, 58 and 59 A in the Act.

Under Section 52(3) Authorized Office can passed order for confiscation of property on being satisfied that forest offence has been committed in respect thereof. It is true, as pointed out by Learned Counsel that the standard of proof required for confiscation proceedings in one case and that required for conviction of offender in the other case is not the same. But for that reason, these provisions cannot be regarded as confiscating or repugnant to each other. Conviction may result in sentence of imprisonment involving deprivation of right to life and liberty and other serious consequences, while order of confiscation of property under Section 52A does not such grave or serious consequences except to remove the vehicle out of circulation and as deterrent. The intention of the legislative is to ensure that the vehicle used in the transaction is no longer available for such misuse and to act as deterrent for the offender and others. These objects can be well served by confiscating the vehicle. Thus the scheme of the Act providing for a separate confiscation procedure has a substantial public purpose to serve and is in tune with Articles 14, 48A and 51A(g) of the Constitution of India.

It is further provided under the provision to Section 52 B that no order confiscating the motor vehicle shall be made except after giving notice in writing to the registered owner of the vehicle and further after considering his objection, if any it is so found that the vehicle was being used or used for carrying the timber without knowledge or connivance of the owner confiscation order shall not be passed. The burden of the proof is generally on the parties seeking relief or having the affirmative of an issue. The burden then shift to the respondent to establish the contrary provision of the Act. In other words, in quasi-judicial proceedings there is no burden caste on any party similarly to the one in criminal proceeding. The law does not ordinarily recognize the principle of criminal proceeding and giving the benefit of doubt to a party or whom the burden of proof lies.

The details of cases admitted and decided in the Authorize Officer, Anni Forest Division is tabulated in table No.-9.3

Table No. -9.3

Year	Balance cases of previous year	No. of cases admitted	Total	No. of cases decided	Property confiscated to the Govt.	Cases pending in Appellate Court/ High Court	Balance cases for disposal
1996-97 to 2004-05	Data not available						
2004-05	0	0	0	0	0	0	0
2005-06	0	0	0	0	0	0	0
2006-07	0	2	2	0	0	0	2
2007-08	2	0	2	0	0	0	2
2008-09	2	0	2	0	0	0	2
2009-10	2	1	3	0	0	0	3
2010-11	3	1	4	0	0	0	4
2011-12	4	1	5	0	0	0	5
2012-13	5	1	6	0	0	0	6
2013-14	6	0	6	0	0	0	6
2014-15	6	0	6	2	2	1	4

2015-16	4	2	6	3	1	1	3
2016-17	3	2	5	0	0	0	5
2017-18	5	1	6	1	1	1	5
2018-19	5	0	4	1	0	0	4
2019-20	4	0	4	0	0	0	4

(Source: Records of DFO, Anni.)

9.5 Fire Protection:

9.5.1 General: The incidence of forest fire in the State is increasing and more area is burnt each year. Fire is a major factor that causes considerable damage to the forests of this division. The fires both accidental and incendiary are very common in this tract due to the reason that majority of forests are easily approachable by roads/paths and the local inhabitants of the tract of this Division have cultivated landed property which is commonly known as *Kandas* etc. Also some of the forests lie in dry/higher reaches of steep and precipitous slopes. As most of the forests are either Kail or scrub forests, any incident of server fire have a considerable adverse effect not only on the incident of severe fire has a considerable adverse effect not only on the vegetation but it also deteriorates the habitat.

According to forest survey of India report of 2009 Himachal Pradesh has 37033 Sq. Kms. of forest area out of which 3224 Sq. Kms. is very dense forests which need to be safeguarded by putting all efforts.

Fire has an adverse effect on soil, water and ecological balance of the affected area. Soil becomes vulnerable to soil erosion and its structure gets affected, thereby retarding plant growth. The soil building micro-organisms are destroyed and the area is ultimately rendered susceptible to erosion and decreasing productivity. The young regeneration is wiped out, growth of surviving vegetation is adversely affected, the yield of forest produce is immensely reduced and the vegetation damaged by the fire becomes vulnerable to insect and fungal attack. The high salvage removals are attributed to this. In the fire burnt forests change in crop pattern takes place, resulting in mixed crop in the forests. A mention of fire as a factor causes injury to the forest crop has already been made in Chapter-II “Flora and Fauna” of Part-I of this plan.

The forests in this division particularly Kail and Spruce are highly susceptible and are subjected to frequent fire in the month of April to June and September to November or even in December whenever there is no snowfall. If fires are not controlled in time, these cause serious damage. The year wise of detail of Forest Fire occurred in Anni Forest Division is tabulated in Table No. 9.4

Table No. 9.4

Year	No. of Cases	Natural Area Burnt (In Ha.)	Plantation Area Burnt (In Ha.)	Total Area (in Ha.)	Estimated Loss (in Rs.)

1996-97 to 1998-99	Data not available.				
1999-00	0	0	0	0	0
2000-01	21	N/A	N/A	419.40	125485
2001-02	0	0	0	0	0
2002-03	0	0	0	0	0
2003-04	7	N/A	N/A	81	90000
2004-05	22	N/A	N/A	895	317000
2005-06	2	N/A	N/A	32	15000
2006-07	10	N/A	N/A	1323	1097883
2007-08	4	N/A	N/A	89	0
2008-09	6	359	35	394	65000
2009-10	80	1281.57	103.5	1385.07	330900
2010-11	17	145.58	28.5	174.08	175625
2011-12	29	443	140.78	583.78	485000
2012-13	39	194.16	55	249.16	213000
2013-14	25	110	134	244	1891000
2014-15	45	399.5	242.1	641.6	1965420
2015-16	23	217	112.5	329.5	1619000
2016-17	54	401	207.35	608.35	1197400
2017-18	97	920.20	315.23	1235.43	1922170
2018-19	76	636	101.5	737.5	792000
2019-20	137	1026.50	362.37	1388.87	2686997
	694			10810.74	14988880

(Source: Record of DFO, Anni).

The detail of fire occurred between the years 1996-97 to 2019-20, as per records of the division, there were **694**No.s of fire incidences and total **10810.74** hac. Forest area was damaged by fire.

The approximate total loss occurred was Rs. **14988880/-**. Fire incidents occurred every year, except in the year **1999-00, 2001-02 & 2002-03**. Maximum annual forest area recorded as burnt has been **1388.87** hac. in the year 2019-20. After field observations, it is also apparent that some fire incidents are not reflected in the records of the division. In reality wild fires do occur frequently in at least some of the areas, in the division.

Because of all these reasons prevention and control of forest fire assumes great importance in Anni Forest Division and there is an urgent need to take effective steps to counter the menace of forest fires, with the aim of:

- a) Protecting forests from damaging fires by taking up all preventive measures like administrative, technical, social, legal etc.
- b) Preparing adequately and taking appropriate action for controlling, suppressing and extinguishing forest fires, in order minimize the loss caused by them;
- c) Educating local people about fire damage and eliciting their cooperation in preventing, controlling and extinguishing fires.

9.5.2 Causes of Forest Fires: The main causes attributable for the outbreak of forest are various and can be summarized as under:-

i. Natural:

This caused due to lightening, friction between quartzite stones and dry grasses. However such natural incidents of forest fires in the tract are not met with so far.

ii. Accidental: Such fires are more common and are caused due to

- a) Throwing of burning cigarette/Bidi pieces in forest areas by the passers-by and the local people visiting to *Kandas*, without visualizing possibility of causing forest fire there-from.
- b) Burning fire left behind in forests by hunters, workers, fuelwood collectors and grazers-again without contemplating possibility of incidence of fire there from.
- c) The scintilla's fallen from wooden torches, used as source of light during dark nights also cause forest fires.
- d) Honey from honey-comb of wild bees in the forests is extracted by villagers during night hours, by burning wooden torches. The ember of burning torches fall on dry grasses and leaves and become cause of forest fires.
- e) Sometimes, fires spreads to forests, from adjoining private fields/land where local inhabitants set fire to burn useless bushy growth, or to get new flush or grass shoots in *Ghasanis*.
- f) The forest fires are also sometimes caused from the spread of embers/scintilla's from charcoal kiln, if proper supervision precaution is not exercised/taken during burning of charcoal kilns in forest areas.

iii. Incendiarism:

The outbreak of fire may be due to incendiarism. The general motives behind the cause of incendiarism in forest are given below:-

- a) In case of illicit fellings, the defaulters maliciously burn such forests to conceal their illegal actions.
- b) Hunters/Poachers burn forests to facilitate killings.
- c) Local people burn forests, plantations if their genuine requirement of timber, fuel are not catered judiciously by the department.
- d) Local inhabitants set fire in the forests deliberately to get new flush of grass for their cattle and collector of Minor Forest Produce like *Gucchi*, from the Forest.
- e) Sometimes encroachers intentionally burn forest area, adjacent to their cultivated lands, orchards to extend their holdings illegally in Government land.

9.5.3 Factors contributing to Fire Damage: Fire is the product of fire environment, which has mainly following components:

- (i) High temperature / Dry conditions.
- (ii) Low humidity.
- (iii) Inflammable material.

(i) High Temperature / Dry conditions: With the increase in temperature during summer season and due to prolonged dry spell, the possibility of fire increases. In this area 25° to 30° is considered the critical temperature, above which the cases of fires keep on increasing with increasing temperature. The detection of fire danger day can be assessed with the help of thermometer.

(ii) Low Humidity: This factor also contributes towards spread of fire. The areas which are more humid are less prone to fire, than the areas, which have low humidity in summers. This is the reason that the casual rain fall reduces the fire risk for a few days.

(iii) Inflammable Material: In most of the forests, grasses, needles, fallen trees, and bushes etc., make ample inflammable material. The possibility of forest fire depends upon the quantity of inflammable material on forest floor. To reduce the inflammable material in forests, control burning should be done.

9.5.4 Fire Season: The greatest danger of fire occurrence is during summer months from April to early July, up to the commencement of monsoon rains. During autumn, and winter season normally, the danger of forest fire is less but occasionally the fires do occur in this period also due to long spell of dry season and late snowfall.

9.5.5 Special Fire Risk Zones: The areas burnt during previous years indicate that the following blocks of forests are especially prone to fire is given in table No.9.5

Table No.-9.5

List of Fire Prone Blocks

Sr. No.	Name of Range	Name of Forest Block
1.	Arsu	Nirmand
		Kharga
		Sarahan
2.	Chowai	Chowai
		Paneo
3.	Nither	Dalash
		Moin
		Nither

Special attention is required for the above forest zones during the fire season.

9.5.6 Management of Fire Protection: The following steps will prove effective in fire management.

- (a) Fire prevention measures.
- (b) Timely detection of forest fires and information to concerned staff.
- (c) Process of fire control and fire fighting.
- (d) Penal provisions and a system of rewards.

a. Fire Preventive Measures: “Prevention is better than cure”, and this holds good in case of forest fires too. Prevention of fire is more beneficial and cost effective than fighting the fire. For this effective steps should be taken well in time, such as summarized below:-

i. Earning good will of Local People: The forests cannot be protected against fire without winning the good will and co-operation of the local people. This can be done by making regular contact with local villagers and meeting the reasonable bonafide demands of right holders, well in time. Also the closures made should be affected for the minimum required period.

ii. Education and Publicity: Wide publicity especially in villages nearby forests should be given against the harms caused by forest fires. For this, timely action should be taken for distribution of pamphlets and other educative material during the fire season, well in advance, so as to acquaint the villagers/local people through Panchayats. The staff should hold regular meetings with local villagers in their areas to create awareness. Also, hoardings, notice boards and banners should be displayed at prominent points to make aware the tourists and local public regarding the damage caused by fires.

iii. Restriction on Tarring of Roads: During fire season, tarring of roads in forest areas should be banned, as PWD staff/labour burns fire underneath drums of bitumen leading to wild fires

iv. Concept of Joint Forest Management: Joint Forest Management may help in preventing and controlling fires. For this active participation of local villagers should be sought by involving people in forestry activities and reasonable power should be given to the VFDS.

v. Removal of Pine Needles: Local villagers should be allowed and encouraged to collect and remove the fire needles, before hand, for domestic purposes. We need comprehensive Policy or Plan to deal with fires and to make use of the inflammable needles for making packing cases etc. This will definitely reduce the fire hazard and increase the livelihood of poor people to a great extent.

vi. Cleaning and Thinning in Regeneration Areas: All regeneration areas should be isolated by cleaning a strip of 1 meter width, all around, from all inflammable material, leaves, bushes etc. Early cleanings and thinning in young regeneration should be done, to give an escapement of 1 meter.

The pruning of trees, which have attained a height of 1.5 meters, should be done upto 1/3rd of their height and debris should be collected at suitable Nallah/place and control burnt.

b. Fire Protection Staff: Divisional Forest Officer will engage sufficient number of fire watchers in consultation with the Chief Conservator of Forests Rampur, during the fire season. Fire watchers (preferably the local villagers), will patrol the areas extensively for detection and protection against fires and will ensure all preventive measures with the local forest field staff. During fire season fire fighting squad be formed out of the daily waged who have been regularized. This squad should always be ready at every Range H.Q and as soon as any information of fire occurrence is received, they be rushed on “Fire Pick up Van”, to that spot.

In Anni Forest Division, R4F (Rapid Forest Fire Fighting Force) has been registered at Beat level. In this force, at least 50 No's of person in every Beat have been register for effective fire control.

A latest guideline in respect of prevention and control of Forest fires are laid down by Govt. of India vide No. 9-6/99-FFD dated 22-6-2001 which should be followed properly.

c. Fire Protection Equipments: The field staff (near the fire prone forests) should be provided with sufficient fire equipments such as brooms, shovels, slashes, axes, hatches, forks, buckets, gunny bags etc., so as to meet any emergency and for facilitating the speedy extinguishing of fire. Field staff should be imparted training for effectively controlling forest fires.

9.5.7 Fire Lines: The existing fire lines be properly maintained and kept clear of all bushes, needles etc. to avoid any chance of fire. It is laid down that all such roads/paths and fire lines should be kept clear of all inflammable material especially during the fire season, so as to act as fire lines. The detail of fire lines existing and the fire lines which are proposed are tabulated and given in table No.-9. 6 & 9.7

Table No.-9.6

List of Existing Fire Lines

Sr. No	Name of Range	Name of Beat	Name of Forest	Particular of Fire Lines	Apprx. Length (In Km)
1	Arsu	Kharga	2/6 GadaMahwa	Between C-I & C-II	0.75
		Tharla	2/16Barnagi		5.6
		Tharla	Baghori		2.5
		Arsu	Damehli		0.9
		Brow, Averi	Jadolinal to Randal		6
		Brow, Averi	Shattaldhar to Sherikater		3
		Brow	Brow Road to Kokvnai		3
		Brow	Sharnidhar		
		Brow	Patwa to KakraNal		2
		Khargha	Chillaage		1.4

		Khargha	Odhadhar to GadaMawa		3.6
		Khargha	Olinaal		1
		Pujarli	1/3 RamgarhKandi		4.4
		Kindla	2/3 Siarunal		2
		Khargha	1/1 Tikker		0.25
2	Chowai	Chowai	1/13 Traijhakar	Between C1 & C2.	2
			1/23 Olinal	Between BP 4&5.	1.5
			1/26 Parkotshill	Between C-Ia and C-II.	1.5
			1/35 BagiglaiPaneo	From BP 21 TO 25 in South East and 28 to 30 separating C-IV & C-I. Separating from UPF Rishta.	1.5
3	Nither		1/8 Lohar	From Boundary Pillar No. 11 to 15 and SepratesNore and Katmore	1.5
		Dalash	1/17 Gohan	From boundary pillar No. 2 to BP 10.	1.5
			1/18 Bhon	Between BP No. 4&5.	1

Table No.-9.7

List of Proposed Fire Lines

Sr. No.	Name of Range	Block	Beat	Particulars of Fire Line	Approx. Length (in KM)
1	Arsu	Nirmand	Brow	Kathanda to Rallu	4
		Arsu	Palli	Bari to Prantla	3
		Arsu	Arsu	Suma to Galol	3
		Nirmand	Averi	Kathanda to Averi	4.5
		Nirmand	Averi	Deodhank to Jadoli	2.5
		Nirmand	Nirmand	Kathanda (CA Plantation)	2.5
		Sarahan	Juagi	UPF Nagerh	3
				Total	22.5
2	Chowai	Khang Chowai Chowai	Kohila	1/27 Bungbindra ban	1.5
			Haripur	1/19 Lamidhar	1
			Haripur	1/20 Dahrut	0
				Total	2.5
3	Nither	Moin	Ghorla	Tuni to Gothana (UPF Thalin& UPF Khanni)	2.5
			Moin	Moin to Nither(UPFNither& UPF Moin)	2.5
			Koil	koil to Kalog(UPFkoil& UPF Kalog)	3.5
		Margi	Katmore	Tirmidhar to Bathwa (UPF Katmore C-65)	3.5
			Katmore	Kultha to Ishwa (UPF Khaliar C-68)	2.5
			Margi	Chimti to Bandaldhar(UPF Margi C-70)	3

		Margi	Bandal Dhar to DeoriDhar(UPFTandi C-69)	1.5
		Nore	Akkrikhad to Thanthal (UPF Nore C-63)	3
		Ghattu	Relta Nalla to Shatki shah (UPFGagAnni C-74)	2.5
		Luhri	Deoridhar to Binal (UPF BaiC-54)	1.5
		Luhri	kot to Sush (UPF Shush C-51)	1
		Luhri	Behna Mod to Mungri (UPF Shush C-51)	1
		Dalash	kandagai (UPF Lunalot C-57)Perinaal to Thach kotal	1
		Sarahar	Sangwa to Odidhar (1/15 Lot Kayon)	4
		Tandi	Tandi to Shildhar (UPF Tandi C-57)	2.5
			Chebri to Anas (UPF Chebri C-83)	2
		Nither	Nintha to Monnalla (UPF Nintha C-87)	1.5
			Total	39

9.5.8 Construction of Watch Towers: A network of watch towers, at suitable commanding locations, should be developed. These should be permanently manned by fire watchers/Forest Workers during the fire season. The fire watcher will immediately come to know and report to the beat guard, any outbreak of fire that may occur. The beat guard will take further necessary action for fire fighting.

9.5.9 Control Burning: The conifer needles and all other inflammable material lying on the floor of forest needs to be control burnt. The burning should be thoroughly planned and organized and should be carried out under the supervision of competent officials.

All the forests must be isolated by clearing a strip of 1 meter width, of all inflammable material, leaves, bushes etc. to act as fire barrier during the fire season. Grazing by cattle, should be permitted, in order to reduce inflammable material in the forests.

It is most essential, that the fire prone forests are adequately protected against fire. The control burning is the most important operation and should never be neglected. The triennial programme for control burning is the most important operation and should never be neglected. The triennial programme for control burning is chalked out and is given in table No.-9.8

Table No. -9.8

Proposal of triennial Programme for Control Burning

Sr No	Name of Range	Block	Beat	Name of Forest	Compartment No	Are in Ha.
1	Arsu	Arsu	Buini	UPF Kati	C-28	117.36
		Arsu	Buini	UPF Shill	C-29	283.28
		Nirmand	Averi	UPF Bail	C-9	874.15
		Khargha	Khargha	1/1 Tikker	C-Ia, C-Ib, C-IIa, C-IIb, C-III	899.22
		Sarahan	Sarahan	UPF Sarahan	C-3	182.1
		Sarahan	Sarahan	UPF Sarahan	C-4	149.73
		Sarahan	ShamAnni	UPF Shalat	C-6	400.64

		Khargha	Tunan	UPF Bishlai	C-45	145.68
		Arsu	Arsu	UPF Rajauri	C-22	60.24
		Sarahan	Juagi	UPF Nagerh	C-30	198.3
		Khargha	Kindla	UPF Kimcha	C-39	655.39
2	Chowai	Chowai	Haripur	UPF Olwa	C-143	299.46
			Haripur	UPF Haripur	C-142	202.34
		Khanag	Kohila	UPF Gadhari	C-173	137.6
			Kohila	UPF Bhalal	C-174	80.93
		Paneo	Karana	UPF Punjdarh	C-121	198.2
		Chowai	Namhong	UPF Khaura	C-147	123.42
		Paneo	Poeg	1/36 PIAnnichalon	Whole	123.43
			Poeg	UPF Binan	C-134	30
3	Nither	Moin	Ghorla	UPF Thalin	C-61	242.81
				UPF KhAnni	C-62	165.92
			Koil	UPF kalog	C-77	354.1
				UPF shanah	C-79	364.21
				UPF Bashla	C-76	190.2
			Moin	UPF Moin	C-86	235.94
				UPF Kuppardarh	C-85	107.93
		Margi	Katmore	UPF Katmore	C-65	279.23
			Ghattu	UPF Ghattu	C-72	194.24
				UPF DagAnni	C-74	72.84
			Nore	UPF Nore	C-63	343.98
		Nither	Tandi	UPF Lunalot	C-57	404.68
			Sarahar	UPF shah	C-88	334.71
				1/15 lot Kayon	C-I	59.9
				UPF Shedri	C-75	392.54
			Nither	UPF Chebri	C-83	269.09
				UPF Nintha	C-87	216.5
		Dalash	Luhri	UPF Shush	C-51	477.53
				UPF Ganchwa	C-52	341.94
				UPF kathua	C-53	299.46
				UPF Bai	C-54	145.68
				UPF Tihni	C-50	299.46
			Kandagai	UPF Lunalot	C-57	404.68
			Dalash	UPF Ganchwa	C-52	341.94
				UPF Soidhar	C-55	137.59
				UPF Sarli	C-56	242.81
				UPF Tadasha	C-49	198.29

(Source: Record of RFO, Arsu, Chowai & Nither)

The forest areas have been prescribed in full, however it is laid done that all the forest areas planted therein should not be controlled burnt, until the plants attain a height of 1.5 meter.

The detailed instructions on control burning are contained in the H.P. Forest Manual Vol. IV and are summarized as below:-

- i) The control burning should be done during winters in February-March.
- ii) Burning should progress from uphill to downhill in calm weather and special care should be taken, to keep the line of fire as straight as possible and under control.
- iii) The fire should start along the ridge, a cleared path or specially cleared lines.
- iv) The needles and other inflammable material should be fully raked to ensure through burning.
- v) CleAnnings and early thinning in young regeneration areas must be completed before the control burning.
- vi) Burning shall be done always under strict supervision and control of the executive staff and shall never be left to the engaged labour.
- viii) The existing fire lines should be properly maintained and kept clear. The roads, bridle and inspection path etc. must be kept clear of all inflammable material, so as to act as fire lines.
- ix) Sufficient number of trained fire watchers should be employed during the fire season to help the field staff and provided with necessary equipments. No felling operations, even to the right holders, should be allowed during the fire season.

It is, however, to be noted that areas under regeneration should not be control burnt, until the regeneration reaches a height of about 2.5 m. In Such areas, however, the grass cutting/needle collection by right holders be encouraged.

9.5.10 Fire Fighting: When a fire is observed, Forest Guard or the fire watcher should at once inform the Block Officer (Dy. Ranger) and the Range Forest Officer. He should also inform the president of the local panchayats immediately, as well as, the staff of the Government Offices or institutions situated in the vicinity and seek their help in the fire fighting operations. In case of alarming situations, immediate help of organizations, like Home Guard various Army Cantonment Head Quarters at Averi Fire Brigade, N.C.C., N.S.S., situated near the vicinity of each range, Beat level, **R4F (Rapid Forest Fire Fighting Force)** the services of and such institution can be availed. District Administration may be requested for immediate help, as and when, required. The fire is normally controlled by beating with a broom of green bushes.

Fire fighting methods have been given in the Punjab leaf let No.-8 and practical Forest Management by Trevor and Smithies. For guidance of field staff, the method is given in brief here. The Senior Officer present will immediately, take command of the operations. He should know the local geography and have some idea of labour force. The labour force should be organized in sections of suitable strength each under the order of one man and given definite task. A couple of men should be kept in waiting to take messages and instructions to the various sections. In case the fire goes beyond control, it is necessary to localize it by counter firing. Counter firing should only be done under order of a senior officer in-charge of operations and attempted from a defined line such as road or ridge or fire line. A line is formed along the ridge by clearing the forest floor and cutting bushes and from this fire is started, so as to consume the fuel in advance of the oncoming fire. Wind direction and gradient should always be kept in mind, while counter firing. Roads/paths are useful, provided, enough man power is present. After the fire has been brought under control, the smoldering stumps should be extinguished by putting the dug earth on them and strict vigilance be kept till all dangers of fire spreading are taken care of. Arrangement for the transport of food, water and adequate fire fighting tools are essential. The

rolls of right holders, who helped to fight the fire, should be kept in record, so that the rights of defaulting right holders can be suspended.

9.5.11 Preparation of Annual Plan: Preparation of an exhaustive annual plan for the fire protection is also, recommended.

9.5.12 Administrative measures: Administrative aspects are also very important in connection with fire protection efforts. Encouragement should be given to good staff, while negligent staff should be punished appropriately so that the officials remain vigilant and cautious in their work. The concerned Conservator of Forests can give suitable reward, in case of exemplary work done by any official or any other person. So that temptation is more towards the fire fighting operations.

9.5.13 Legal Measures: All cases of incendiarism should be properly investigated and punitive measures should be taken against the culprits. Legal provisions regarding forest fires are available under Indian Forest Act, 1927. Setting fire to Protected Forest is punishable under Section 33 of the Act with imprisonment up to two years or fine up to Rs. Five thousand or both. Similarly under Section 33 (2) whenever fire is caused willfully or by gross negligence in a protected forest, the State Government may, notwithstanding that any penalty has been inflicted under this section, direct that in such forest or any portion thereof the exercise of any right of pasture or to forest produce shall be suspended for such period as it thinks fit.

Section 79 (1) of the Indian Forest Act, 1927 makes obligatory on every person, who exercises any right in a reserved or protected forest or who is permitted to take any forest produce from forest or Govt. employee shall be bound to furnish without un-necessary delay to the nearest Forest Officer or Police Officer any information with respect to any commission of forest offence, and shall forthwith take steps, whether so required by Forest Officer or Police Officer or not

- (a) To extinguish any forest fire in such forest of which he has knowledge or information;
- (b) To prevent by any lawful means in his power any fire in the vicinity of such forest of which he has knowledge or information from spreading to such forest, and shall assist any Forest Officer or Police Officer demanding his aid.
- (c) In preventing the commission in such forest of any forest offence; and
- (d) When there is reason to believe that any such offence has been committed in such forest in discovering and arresting the offender.

And any violation of the provision of this Section is punishable under Section 79(2) with imprisonment for term which may extend to one month, or with fine which may extend to two hundred rupees or with both.

Therefore, field functionaries/staffs must take action accordingly so that the object of fundamental duty could be achieved.

Further the H.P. Govt. has framed rules regarding fire protection known as Himachal Pradesh Forest (Protection from Fires) Rules, 1999 vide H.P. Govt. Notification No. FFE-A(C)7-1/96 dated 7-11-1999. The field functionaries should follow the Rules and instructions as contained in the given notification.

Vide this notification setting of fire to a protected forest is prohibited under Section 32 of the Act as under:-

- (i) Kindling of fire within one hundred meters from a forest without permission of the Divisional Forest Officer, or his authorized representative shall be prohibited.
- (ii) Any person lighting a fire even beyond one hundred meter from the boundary of a forest shall take precautions, by clearing a fire path, not less than 10 meters in width between such place and such boundary, or by employing watchers or otherwise, to prevent the fire from spreading.
- (iii) Precautions to be taken in burning agriculture residue bushes or “Ghasnies” near forest. No person shall ignite agriculture residue or set fire to “Ghasnies”, clear by fire any land, within a distance of one hundred meter from the boundary of the forest, unless;
 - (a) he gives notice of his intention to burn or clear the land by fire, at least one week before doing so, to the nearest Forest Range Officer under whose jurisdiction such land lies; and
 - (b) there is between such boundary, and the spot on which such materials are ignited, a space at least ten meters in width which is clear of all vegetation capable of carrying fire from such spot to the forest.
- (iv) Restrictions on collection and stacking of inflammable forest produce of inflammable material outside the boundary of or in the forest. Any person collecting such inflammable material, that is to say, forest produce such as grass, dried leaves and pine needles, firewood, timber, bamboo and resin, on a land adjoining a forest, or a holder of a pass or permit issued by a Forest Officer, or a person exercising his privilege or right to collect such forest produce from a forest, shall stack it at, as the case may be, in an open space in the forest as the Division Forest Officer may, by general or special order, specify, and shall isolate such stacks in such manner that, if it catches fire, the fire shall not spread to the surrounding area to endanger the forests.

Fire cases may also be registered with Police under Section 435 of IPC or Prevention of Damage to Public Property Act, 1984 to punish unscrupulous persons who set the fire to forests willfully, and with ulterior motives. Therefore, all cases of fires are to be registered with the Police against the offender or un-known offender or Jumaladaran for investigation and bringing the culprits to book soon after the outbreak or cause of fire.

9.5.14 Assessment of loss caused by Fire : Fire causes tangible and intangible damages to the forests & wild life. Loss of timber, resins etc. are tangible, whereas loss of soil fertility and soil constituent are intangible. Fire causes adverse effect on regeneration and destroys under growth leading to invasion by weeds. Being afraid of disciplinary action, the loss caused by forest fire is often not actually recorded by field staff and is also under estimated because of which calculation of exact magnitude of loss is hardly possible. The methodology for assessment of fire loss developed by the CCF, Forest Protection, Bilaspur shall be followed as under:-

Sr. No.	Type of loss	Loss/hac.	Remarks
1	2	3	4
Conifer Forests			
1.	plantation areas 1 st year	Area in hac. (No. of plants planted/hac.)x (Survival %) (Current planting cost/plant)	
2.	Plantation areas 2 nd to 10 th year	(Total expenditure on plantation including maintenance upto date x No. of plants burnt) / (No. of plants as per norms) 10% increase on	

		fire loss for each year upto 10 years.	
3.	Area under Natural Regeneration (Seedling loss)	Can be assessed for fully stocked area as in case of plantation.	Loss of natural regenerated seedlings due to fire burning.
4.	Area consisting pole stage crop, middle age crop and mature crop	.....	The loss sustained due to forest fire can be assessed after rainy season and 50% value of the dried or salvage trees (due to fire) can be applied for calculating loss. (with salvage, the royalty is taken as 50% of the total market value of tree)
5.	Resin blazes	.....	As per royalty rate fixed by the Govt. of H.P. from time to time.
6.	Fodder & Grasses	.....	No fodder is available in the Chil forests. However grasses are usually cut by the right holder before fire season. Hence no loss sustained in conifer forests.
7.	Beneficial Herbs, Shrubs & Wild fruits.	.....	Beneficial Herbs, Shrubs & Wild fruits which are collected by the right holder and food for the wildlife is a indirect loss and can be assessed keeping in view of the availability in particular forests and loss can be calculated on average annual yield which be can ascertained from the permit issued in the past or local subsistence usage.
8.	Other Environmental and Wildlife loss.	.....	Difficult to assess in term of money due to lack of requisite methodology.
9.	Domestic losses	Should not be considered as it is assessed by revenue department.	The loss caused due to fire to the domestic property in habitants like houses, cattle sheds, domestic Annimals, human life can be assessed separately per each individual case.
10.	Costs in anticipation (Pre dominantly cost for protection and preventive measures under taken by Forest Department and also for potential victims of Fire)	The actual expenditure incurred for prevention purposes like control burning etc.	The cost is based on average expenditure incurred for such activities in previous years. The focus of these activities is generally on the pine forests to save the pine forests from fire during summer season the funds are required to be further increased.
Miscellaneous Broad Leaved Forests			
1.	Plantation areas.	(Area in hac.)X (No. of plants per hac.)x(Survival%)x(Current planting cost/plant)	
2.	Regeneration areas/coppice	Can be assessed in case of fully stocked areas as is in the case of applications.	Loss caused due to forest fire by burning of seedlings/coppice shoots.

3.	Areas consisting young crop	.....	No loss sustained to young crop of B/L trees due to forest fire in these forests. If some trees are dried up after rains the value of same can be assessed @ 50% of the market rate.
4.	Beneficial herbs, shrubs & wild fruits.	.....	Beneficial herbs, shrubs & wild fruits which are collected by the right holders and food for the wildlife is a indirect loss and can be assessed keeping in view of the availability in particular forests and loss can be calculated on average annual yield which be can ascertained from the permit issued in the past or subsistence usage by locals.
5.	Fodder & Grasses	Since these resources are renewable the loss should not be considered	Loss caused due to burning of leaves of fodder trees and grass. Availability of fodder and grasses is more in broadleaved forests as compared to conifers.
6.	Other environmental and wildlife loss.	.....	Difficult to assess in term of money due to lack of requisite tools/methodology. However the loss sustained to environment and wildlife is long term loss and cannot compensated easily.
7.	Domestic losses	Should not be considered as it is assessed by revenue department.	The loss caused due to fire to the domestic property in habitants like houses, cattle sheds, domestic Annimals, human life can be assessed separately per each individual case.

Scrub Forests

1.	Plantation areas.	(Area in hac.)X (No. of plants per hac.)x(Survival%)x(Current planting cost/plant)	
2.	Areas consisting young crop	.....	No loss sustained to young crop of B/L trees because of forest fire in these forests. If some trees are dried up after rains the value of same can be assessed @ 50% of the market rate.
3.	Beneficial herbs, shrubs & wild fruits.	.....	Beneficial herbs, shrubs & wild fruits which are collected by the right holders and food for the wildlife is a indirect loss and can be assessed keeping in view of the availability in particular forests and loss can be calculated on average annual yield which be can ascertained from the permit issued in the past or subsistence usage by locals.

4.	Fodder & Grasses	It is renewable resource, hence, should not be considered	Loss caused due to burning of leaves of fodder trees.
5.	Other environmental and wildlife loss.	.....	Difficult to assess in term of money due to lack of requisite tools/methodology. However the loss sustained to environment and wildlife is long term loss and cannot compensated easily.
6.	Domestic losses	Should not be considered as it is assessed by revenue department.	The loss caused due to fire to the domestic property in habitants like houses, cattle sheds, domestic Annimals, human life can be assessed separately per each individual case.

9.5.15 Fire Record

A complete record of fires will be maintained, both in Range, as well as Divisional office. Maps of the forests showing the area burnt by fire will be maintained along with other relevant details regarding fire. The fire reports should contain a map of the area burnt. All the fire reports are sent to higher authorities on the prescribed proforma along with inspection report of R.O/ACF and DFO and follow up action taken accordingly.

9.6 Encroachment:

The problem of encroachment is seriously persistent in forested region of Himachal Pradesh especially in Shimla, Kullu, Mandi, Chamba, Kullu & Anni Districts at large. There can be no denying fact that during the past three decades forest areas have been shaved off extensively for non-forestry purpose. Year by year, more and more land under forest cover is being brought under the plough even by way of large scale encroachments. The land grabbers have evolved a strangely novel method to eliminate the forest growth.

Under the Forest (Conservation) Act, 1980, diverting of forest lands for non-forestry purpose without the prior approval of Govt. of India is not permissible. As such even the settlement staff of the revenue department cannot divert forest land for non-forestry purposes without the permission of the Govt. of India. The provision of Indian Forest Act, 1927 are only punitive. For eviction of the encroachers, simultaneous action is to be taken to file a challan before the Assistant Collector Grade-I concerned for taking up proceeding under Section 163 of H.P. Land Revenue Act, 1954 for ejectment of the encroachers on the Govt. land i.e. other than forest land and whereas in respect of the encroachment on forest land eviction proceedings by the DFO-cum-Collector shall be commenced under the Himachal Pradesh Public Premises and Land (Eviction & Rent Recovery) Act, 1971, unless the proceedings are initiated under the Act, eviction of the encroachers will not be possible under the Indian Forest Act, 1927. The latest position of encroachment cases in Anni Forest Division has been given in Table No.-1.9 paragraph No. 1.18 of Chapter-I.

9.6.1 Causes of Encroachment: The main causes of encroachment can be summarized as under:-

- i) Due to increase in population, the greed for having more and more land for fulfilling their basic needs amongst the local people has increased.

- ii) Coming up of Forest Rights Act, 2006 {Scheduled Tribes & other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006} is also responsible for large scale of encroachments in Anni Forest Division.
- iii) The forest boundaries are not properly demarcated either on the ground or in the record etc.
- iv) In a very large number of cases the notified forest areas have not been recorded properly in the land records, maintained by the revenue department and continue to be shown as non-forest areas i.e. Charagah Bila Darakhtan and Charagah Darakhtan etc. Secondly, the department of forest has failed to proof or placed on the record the notification declaring the forest in question 'Protected Forest' under the provision of Indian Forest Act, 1927. In the absence of evidence (under Section 78 of Evidence Act, 1872) of Circulation of the notification under Section 29 read with Section 30/31 of Indian Forest Act, 1927, the conviction under Section 33 of the Act would be bad in the eyes of law. Many cases are lost in the courts on this account alone.
- v) There is no provision or mechanism to book and punish the abettors of encroachments. This encourages the highly organized land mafia, politicians and influential Section of Society to actively support and encourage large scale encroachments as they derive financial, political and social benefit from such benefits.
- vi) Influential persons with political affiliations not only promote encroachments but also abet the entire process.
- vii) The punishment meted out to the offenders is insignificant compared to the gravity of the offence committed.
- viii) The existing provisions for removal of encroachments are time consuming and grossly ineffective. In respect of UPFs or Un-classed forest areas recorded as Govt. land in revenue records, which are not legally notified and constituted forests under Section 29, 30, 31 and 32 of the Act, the provision under which an offence can be booked are not clear except Section 447 of IPC only.
- ix) There is no special provision provided in the Indian Forest Act, 1927 for eviction of encroachment as like provision provided in the Wild Life (Protection) Act, 1972. Similarly, there is no provision for recovering environmental losses from the encroachers caused due to the damage to flora and fauna and for the loss of productivity of the forest land. This emboldens them to encroach more forest land.
- x) Demarcation of disputed land as given by the Patwari/Kanungo who under the law is not competent to demarcate the same. In the absence of proper demarcation under Section 107 of the H.P. Land Revenue Act, 1954 by the competent Revenue Authority, the proceeding initiated against encroachers cannot be held to be legal and valid.
- xi) Large scale encroachment removals result in serious law and order problem requiring a strong political will, contingent of police force and presence of a magistrate. These are not available to the forest department whenever needed, which results abandoning such drives or eviction on spot in the past.

9.6.2 Preventive Measures:

- i) Forest officials must be well conversant with boundaries of the forests falling in their respective jurisdictions. Range Officer, Block Officers and Forest Guards must check the boundary pillars frequently and if anything is found wrong, immediate step should be taken for maintenance of boundary pillars and booked the wrongdoer under the Act.
- ii) Forest Guard must issue the damage report under the provision of Indian Forest Act, 1927 and information in this regard be sent to his superior within 3 days. On the report of in charge beat guard, Block Officer/Range Officer, should get the area encroached upon demarcated under Section 107 of the H.P. Land Revenue Act, 1954 and challan the case before the DFO-cum-Collector court for initiating eviction proceedings under the H.P. Public Premises and Land (Eviction & rent Recovery) Act, 1971, unless under this Act, eviction of the encroacher will not be possible under Section 33 of the Indian Forest Act, 1927. It is further pertinent to mention here that there is no bar for registering the FIR against the encroacher under Section 447 of IPC read with Section 32/33 of IFA, 1927. Limitation period for challenging the forest offence under Section 468 of Cr. P.C is 3 years but challans should not be delayed unreasonably.
- iii) Periodic checking of all forest offence cases and review of progress etc. by ACF/DFO and CF is therefore necessary.

9.6.3 Steps taken for Eviction on Forest Land: All Divisional Forest Officer have been delegated with the powers of Collector under H.P. Public Premises and Land (Eviction & Rent Recovery) Act, 1971 within their respective jurisdiction vide H.P. Govt. Notification No. 1-21/71-SLG dated 8-6-1994 besides taking punitive action against the encroachers under Section 447 of IPC read with Section 32/33 of Indian Forest Act, 1927. Now the H.P. Govt. delegated the powers of Collector to the Assistant Conservator of Forests (ACFs) to function of the collector within their respective jurisdiction of Forest Division vide H.P. Govt. notification dated 9-11-2012.

Powers of carrying out demarcation of disputed land in question are vested with Revenue Authority under Section 107 of the H.P. Land Revenue Act, 1954

The forest and revenue officers/officials are responsible and liable for detection/removal of encroachment cases ***under the provision of H.P. Prevention of Specific Corrupt Practice Act, 1983.***

Therefore, revenue officers/official are responsible for initiating eviction proceeding under Section 163 of the H.P. Land Revenue Act, 1954 against the encroacher who have encroached upon the Govt. land i.e. other than forest land which is not a notified forest land under the provision of Indian Forest Act, 1927.

In compliance of the Hon'ble High Court order dated 28-8-2009, Pr. Secretary Forests issued notification on dated 5-5-2010 has directed that, *when encroachment is detected on forest land, action for removal of such encroachment shall be initiated under the Himachal Pradesh Public Premises and Land (Eviction and Rent Recovery) Act, 1971 and also action for committing forest offence by the encroacher shall be initiated under the Indian Forest Act, 1927. FIR under various provisions of Indian Penal Code shall be registered with Police in case:-*

- (i) *Boundary pillars have been tempered with;*
- (ii) *Permanent structure has been made;*
- (iii) *Area encroached more than 10 bighas;*

(iv) *There is encroachment within the Protected Area Network (PAN) i.e. in a Wild Life Sanctuary or National Park.*

(v) *The cases involving avoidable damages exceeding rupees 10 lacs caused by the Companies or Corporate Bodies.*

Thus it should be made clear to the field executive staff that encroachments on RFs, I & II Class DPFs and Listed III Class UPFs are their direct responsibility. If any encroachments are allowed, the Forest Guard concerned shall be personally responsible for allowing such encroachment. In case the Forest Guard issue a damage reports and submit the cases to the B.O. and the Block Officers/Range Officer do not take further action under the provision of law, they shall be responsible for the encroachment. The Range Officer and the Divisional Forest Officer shall also be held responsible for such cases, if these are kept pending in their respective office without taking further action in compliance of the Hon'ble H.P. High Court order. Therefore the Range Officer has to ensure that no encroachments take place in DPFs and wherever such encroachments have already taken place or to be taken, the case should be detected and challan be prepared for eviction and punishment after following the due process of law.

The field staff is required to carry out preliminary survey for detection of encroachment on forest land with the help of forest Patwari/Kanungo before getting demarcation from the revenue authority by the field functionary authorities.

9.7 Mining :

9.7.1 General: The Western Himalayas and its foothills is a treasure house of the minerals being exploited by human being since time immemorial with the advent of society. The methods of extraction of the minerals became more and more mechanized which resulted in extraction of the minerals at a pace much faster than the pace at which the nature could meet itself with such a situation is recover from the onslaughts of human beings. The production of aggregate in a particular area is a function of the availability of resources, the size of population, the economy of the area and various development and infrastructural works being undertaken in the area i.e. road construction and Hydro power projects etc. It brought into sharp focus the conflict between development and conservation of natural resources, which served to emphasize need for reconciling the twin objectives into the large interest of the society.

Mining in forest area is an another cause of forest degradation and environmental pollution but in State of Himachal Pradesh there is few number of cases of mining in protected forest. Mining operation is being carried out in this tract on Govt. waste land i.e. River/streambeds such as Gair Mumkin Khad /Nallah, Na-Kabil Charand and private land under the administrative Central of Himachal Pradesh Industries Department and State Environment Protection and Pollution Control Board. The State Geologist in the Director of Industries designated as Authority on behalf of the State Govt. to supervise and control of such work w.e.f. 19-12-1998. Thus the forest department has major role only under Section 2 of the Forest (Conservation) Act, 1980 for granting or renewal of mining lease in forest area in compliance of the Hon'ble Supreme Court order dated 12-12-1996. The area applied for lease on non forest land shall be inspected by a committee constituted as per River/Stream Bed Mining Policy guidelines for the State of Himachal Pradesh, 2004 dated 28-2-2004. Based on the approval of the sites for setting up of the Stone Crusher unit & grant of mining lease after obtaining consent to operate from the State Pollution Control Board, Forest Department and Mining Department etc. The permanent registration shall be issued to the owner of the Stone Crusher by the Geological Wing, Department of Industries is under the provisions of the Himachal Pradesh Minor Minerals (Concession) Revised) Rules, 1971.

9.7.2 Supreme Court on Mining: - Thus, it clears that no mining operation is allowed on forest land without prior permission of Central Govt. under Section 2 of the Forest (Conservation) Act, 1980. In series of orders in the *T.N. Godavarman case, the Supreme Court* dealt at length and at times in minute details about instances of mining taking place in forest area. The Supreme Court however, made it clear that it was not against mining per-se but against mining which is in violation of the Forest (Conservation) Act, 1980 and also mining in National Park and Sanctuaries in compliance of the court order dated 14-2-2000.

The Supreme Court kept a strict watch on the implementation of the order. Not only was it concerned about the fact that no illegal mining activities should take place in forest areas, but it also kept a vigil against any leniency shown to those involved in illegal mining. The court made it amply clear that it has to be informed about all development, which relate to illegal mining.

It is also pertinent of point out that as per directions given by the Hon'ble Supreme Court of India, in mining matters, the mining of any mineral is a non forest purpose and is therefore, not permissible without prior approval of the Central Government.

The meaning of Forest shall be understood strictly in accordance with the law laid down by the Hon'ble Supreme Court of India in the case *T.N. GodavarmanThirumulkpad etc. versus Union of India and others (AIR 1997 SC 1228)*. The word 'Forest' must be understood according to its dictionary meaning. This description covers all statutorily recognized forests, whether designated as reserved protected or otherwise for the purpose of Section 2(1) of the Forest (Conservation) Act, 1980.

For the purpose of application of Forest (Conservation) Act, 1980, the expression 'Forest' land would mean a tract of land covered with trees, shrubs, vegetation and undergrowth under mingled with trees with pastures, be it of natural growth or manmade forestation. The Gair Mumkin area i.e. river beds, nallas, khalas/dhank/junglejhari, such areas falls within the ambit of expression forest land.

In compliance to directions of Hon'ble Supreme Court, all the cases of mining lease, are required to be processed, under Forest (Conservation) Act, 1980 and further mining operation may be allowed subject to the following conditions:-

- i) No mining operation shall be allowed in forest land unless or until permission for its non forestry purpose is obtained from Central Government under the provisions of Forest (Conservation) Act, 1980.
- ii) Mining operation in private land may be allowed only if it does not cause any damage to the adjoining forests that too after obtaining prior permission from the competent authority.
- iii) The mining shall be started from top to bottom by making benches 6mx6m keeping general angle of repose as 45°.
- iv) Dumping sites for mine works and top of soil shall be provided in such a way so that there is no damage to the adjoining land; the same does not roll down the slope. Top soil shall be used for Afforestation purpose in the barren/exhausted paths.
- v) The lessee shall erect check dams of undressed stones at different suitable sites along the slope of the area and also along nalla to avert the flow of debris rolling down the slope and to check soil erosion.

- vi) The lessee shall take all necessary precaution while carrying out blasting operations if needs.
- vii) Adequate measures shall be taken to check the air pollution.
- viii) Sufficient funds should be provided to Forest Department to carryout Afforestation and soil conservation works after the lease is over apart from minor works carried out as mentioned above during the mining operations.
- ix) No extraction of sand, gravels, and stone shall be allowed along the roads and river bank to check the menace of erosion.
- x) Trees of suitable species shall be planted to develop a green belt within and along the boundary of the premises.

The Hon'ble Supreme Court further directed that before any mining operations commence, the lease holders shall obtain all statutory clearances including environmental clearance in term of MOEF notification dated 14-9-2006 and also the approval under the Forest (Conservation) Act, 1980 read with the Environment Protection Act, 1986. However, no stone crusher unit and mining lease area are granted in RF and DPF except in un-demarcated protected forests in Anni Forest Division, the details of stone crusher units is tabulated in table No.-9.9

Table No.-9.9

Detail of Stone crusher and mining lease areas

S.No	Name of Stone Crusher	Govt/Pvt Land	Kharsa No	Location with area (Maujza)	Approval accorded by GoI/State Govt	Remarks permitted up to)
1	MKC Stone Crusher	Pvt. Land	178/1	Chhaunti (Dingidhar)	State Govt.	06.01.2028
2	Atul Stone Crusher	Pvt. Land	2636/1 '& 2636/2	Moin (Chiuni)	State Govt	

(Source: - Records of DFO, Anni).

The mining activities in the Govt. land i.e. River beds/waste land falls under the provisions of forest department notification dated 25-12-1952. According to this notification every Govt. waste land over which the State Govt. has the proprietary right or the property of the Govt. is a forest land for the application of Forest (Conservation) Act, 1980 in compliance of the Hon'ble Supreme Court order dated 12-12-1996. Thus River beds/waste lands of the tract in this division attract the provisions of Forest (Conservation) Act, 1980. Therefore, it is the duty of the forest department to keep watch and ward over their properties primarily as nodal officer under the Forest (Conservation) Act, 1980. And after registration of stone crusher unit and mining lease area by the Geological Wing, Department of Industries under the provisions of H.P. Minor Minerals (Concessions) Revised rules, 1971, the Sub-Divisional Level Flying Squad or Committee under the chairmanship of the Sub-Divisional Magistrate constituted by the Govt. of H.P. vide notification No. Udyog-II(F) 6-20/2005 dated 30-4-2001 is responsible for all un-authorized or illegal and unscientific mining and stone crushing operation without realizing the proper compounding fee in terms of the law laid down by the Hon'ble High Court.

Vide H.P. Govt. Notification No. Rev. B.A (4)8/2004-loose dated 21-4-2006 notified that notification issued in the year 1952 by the Govt. of Himachal Pradesh, Forest Department, the

provision of Indian Forest Act, 1927 and Forest (Conservation) Act, 1980 will not apply to the lands vested in the State Govt. under the provision of the H.P. Ceiling on Land Holding Act, 1972 and H.P. Village Common Lands Vesting and Utilization Act, 1974 unless any land which vested in the State Govt. under the aforesaid enactments was recorded as forest land in the revenue record before vestment etc.

9.7.3 Mining Lease mandatory for running a Stone Crusher Unit: In order to ensure legal and regular supply of minor minerals, every owner of stone crusher, shall have a valid mining lease for this purpose.

No person shall install or run any stone crusher in any area within the State of Himachal Pradesh unless he obtains a provisional registration from the Geological Wing, Department of Industries. For this an application Form “A” shall be submitted and it shall be accompanied by fee of Rs. 2500/- only. Permanent registration shall be issued to the owner of the stone crusher by the Geological Wing, Department of Industries after obtaining consent to operate from the Pollution Control Board on Form-‘B’. in case of renewal of the registration, the owner of stone crusher shall apply for the renewal at least six months prior to the expiry of the registration in Form-“A”.

9.7.4 Other condition for running of stone crusher: The owner of the stone crusher shall observe the provisions of:-

- i) The Forest (Conservation) Act, 1980 and rules framed there under.
- ii) The Air (Prevention and Control of Pollution) Act, 1981 and rules framed there under.
- iii) The Water (Prevention & Control of Pollution) Act, 1974 and rules framed there under.
- iv) The Environment (Protection) Act, 1986 and rules framed there under.
- v) The Noise Pollution (Regulation and Control) Rules, 2000.

9.7.5 Condition for Mining Lease: As per strategy No. 9.6 of River/Stream Bed Mining Policy guidelines and Rule 21 (4) (i) of the H.P. Minor Mineral (Concession) Revised Rules, 1971 (as amended on 10-6-2004) every applicant shall submit Working-cum-Environment Management Plan for carrying out systematic and scientific mining.

9.7.6 Mining in Hill Slopes shall be subject to following General Conditions:

1. Environment Considerations

- i) No mining shall be allowed within 100 meters of thickly forested area.
- ii) No mining shall be allowed in areas, which may cause aesthetic/visual degradation near any known tourist spot.
- iii) No mining shall be allowed where it is likely to disrupt the existing water regime IPH schemes, roads, bridges etc.
- iv) No mining shall be allowed where danger to site of culture, religions, historical, archeological or scenic importance is likely.

- v) No mining shall be allowed near habitation, where it is likely to cause noise and vibration problems, due to blasting or operation of machinery.
- vi) No mining shall be allowed where proper disposal of mine waste cannot be arranged, i.e. Dumping Yard etc.
- vii) Conditions shall be imposed that the lease holder will take adequate steps to control and check soil erosion; debris flow etc. by raising various engineering structures.

II. Geological and Geomorphologic Considerations

- i) No mining shall be allowed where the slope angles are more than 45° from horizontal and in case of mid slope mining, the foot wall should be of hard strata.
- ii) No mining lease shall be granted where the ore to overburden ratio is not economical i.e. 1:0.2, that is, the waste generation should not be more than 20%.
- iii) Proper appraisal of the deposit for its qualitative and quantitative assessment shall be made in the form of Geological and topographical plans.

III. Technical Consideration

- i) The area should not be highly jointed, fractured or consisting of weak planes.
- ii) Relation of slope angle to angle of repose should be within mining parameters where 6x6 meter benches by keeping overall angle of repose as 45° can be made.
- iii) No mining shall be allowed where subsidence of rocks is likely due to steep angle of slope.
- iv) No overhangs shall be allowed to be formed during the course of mining.
- v) The gradient of approach roads shall be gentle with side drains and parapet walls. Adequate number of waiting and crossing points shall be provided for safe plying of vehicles.
- vi) No blasting shall be resorted to without taking proper license under Explosive Act.

IV. General Conditions

- i) Mining site shall only be handed over to the lease holder after it is duly demarcated by permanent boundary pillars and certified by concerned Mining Officer.
- ii) Junction at take off point of approach road with main road shall be developed with proper width and geometric required for safe movement of traffic by crusher owner at his own cost and in consultation with Executive Engineer, HPPWD.
- iii) No lease holder shall store/stack any material in the acquired width of PWD road without the specific permission of the competent authority.
- iv) In addition to above, the mining operation shall be subject to provisions of various Acts and Rules in force.
- v) Dumping of waste shall be done in earmarked places as per the approved Working Plans.

9.7.7 Delegation of Powers: All Deputy Commissioners/ CFs, Divisional Forest Officers/ACF's and Range Forest Officers have been delegated with the powers under Sub Section (2) of Section 26 read with Section 21 (4) of the Mines & Minerals (Development & Regulation) Act, 1957 to empower to seize any minerals raised or transported or caused to be raised or transported by any person without any lawful authority, any mineral from any land for that purpose use any tool/equipment, vehicle or any other thing for this purpose

All forest guards have been delegated with powers under Section 22 of the Mines & Minerals (Development & Regulation) Act, 1957 to make complaint in written in the court of competent jurisdiction in respect of any offence punishable under the said Act or any rules made there under. Similarly Assistant Conservator of Forests and Range Officers have also been delegated with powers under the Act to make complaints in courts in writing in respect of any offence punishable under the Act or any rules made there under in their respective jurisdiction

The powers also have already been delegated to all Deputy Commissioner/Executive Magistrates and SP in HP within their jurisdiction to seize any material raised by any person without any lawful or any tool, equipment, vehicle or any other thing brought on the land for the purpose, under Section 21 of Mines & Minerals (Development & Regulation) Act, 1957. Similarly all Directors, State Geologist, Deputy Commissioners, Executive Magistrate and Police Officers have also been delegated with powers under the act to make complaint in writing in the court of competent jurisdiction in respect of any offense punishable under the Mines & Minerals (Development & Regulation) Act, 1957.

Following Sub-Divisional Level Flying Squad has been constituted vide Notification No. Udyog (Chh) 7-3/90 dated 11-3-1993 and revised vide notification No. Udyog (Chh) 7-3/90 dated 20-11-1993.

1.	Sub Divisional Magistrate	-	Chairman
2.	Assistant Conservator of Forests	-	Member
3.	DSP or his representative having local jurisdiction-		Member

The above committee is authorized to requisition the relevant record from the office of Mining Officer and the Services of Mining Officers and his staff for the purpose of carrying out such inspections.

Taking into consideration the hill topography, availability of less land and requirement to maintain the fragile ecology of the hills, the units shall be setup keeping in view the following criteria namely:-

Sr. No.	Criteria	Distance
1	2	3
1.	Minimum distance from National highway/nearest State highway.	100 Mtrs.
2.	Minimum distance from the District Headquarter.	1.5 Kms.
3.	Minimum distance from any Town/Notified Area Committee.	1.00 Kms.
4.	Minimum distance from village Abadi deh.	250 Mtrs.
5.	Minimum distance from Hospital or Educational Institute.	1.00 Kms.
6.	Minimum distance from Springs, Canals, reservoirs and functional water supply schemes.	100 Mtrs.
7.	Minimum distance from notified lakes and wetlands.	500 Mtrs.

8.	Minimum distance from Link roads/Other Distt. roads	75 mtrs
9.	Minimum distance from Natural water springs	500 mtrs.
10	Minimum distance from Notified parks	2 Kms.
11.	Minimum distance from Bridge sites	200 mtrs. Upstream 300 mtrs. Downstream.

9.7.8 Illegal Mining: Under Sub Rule (I) of rule 53 of the H.P. Minor Minerals (Concession) Revised Rules, 1971, no person shall undertake any operations in any area, except under and in accordance with the terms and conditions of the mining lease, contract or permit granted under these rules.

Under Sub Rule (2) of rule 53, any contravention of sub-rule (1) shall be punishable with imprisonment for a term which may extend to one year or with fine which may extend to five thousand rupees, or with both and in case of a continuing contravention, with an additional fine which may extended to five hundred rupees for every day during which the contravention continues after conviction for the first such contravention.

9.7.9 Cognizance of Offences: Under Rule 54, no court shall take cognizance of any punishable under these rules except upon a complaint in writing made by the Director or any other officer authorized by him in this behalf within six months of the date on which said offence is alleged to have been committed.

9.7.10 Restrictions on Transport of the Minerals under Rule 57:

- (i) The holder of a mining lease or mining permit or a person authorized by him in this behalf shall issue a pass in Form 'M' duly countersigned by the concerned Mining Officer/General Manager, District Industries centre or any officer authorized in this behalf to every person carrying a consignment of minor mineral by a vehicle, Annimal or any other mode of transport.
- (ii) No person shall carry within Himachal Pradesh a minor mineral by a vehicle, Annimal or any other mode of transport, excepting railway, without carrying a pass in Form 'M' issued under sub-rule (1)
- (iii) Every person carrying any minor mineral shall on demand by any officer of the State Government authorized in this behalf, show the said pass to such officer and allow him to verify the correctness of the particulars of the pass with reference to the quantity of the minor mineral.
- (iv) The State Government may establish a check post for any area included in any mining lease or permit, and when a check post is so established, public notice shall be given of this fact, by publication in the Gazette and in such other manner as may be considered suitable by the State Government.
- (v) No person shall transport a minor mineral to which these rules apply from such area without first presenting the mineral at the check post fixed for that area for purposes of verification of the weighment or measurement of the quantity of the mineral.

- (vi) Any person found to have contravened any provision of sub-rule (2), (3) or (5) above shall, on conviction, be punishable with imprisonment of either description for a term which may extend upto six months or with fine which may extend to one thousand rupees or both.

Besides this the Himachal Pradesh Minerals (Prevention of illegal Mining Transportation & Storage) Rules, where stringent provision have been made in case of violation have been notified by the Govt. vide notification No. Ind. II (F) 11-3/2000 dated 11-8-2004. To curtail illegal mining, instructions have also been issued to all the Mining Officers that no case of illegal extraction of mineral shall be compounded for less than five thousand rupees. If the offence is repeated, the case shall not be compounded and shall be lodged in the court of law.

9.7.11 Compounding of offences under the Mines & Minerals (Development & Regulation) Act, 1957:

Rule 23 A (1): Any offence punishable under this Act or any rule made there under may, either before or after the institution of the prosecution be compounded by the person authorized under Section 22 to make a complaint to the court with respect to that offence, on payment to that person, for credit to the Government, of such sum as that person may specify:

Provided that in the case of an offence punishable with fine only, no such sum shall exceed the maximum amount of fine which may be imposed for that offence.

(2) Where an offence is compounded under sub Section (1) no proceeding or further proceeding, as the case may be, shall be taken against the offender in respect of the offence so compounded, and the offender, if in custody, shall be released forthwith.

9.7.12 Rule 23 B Power of Search: If any gazetted officer of the Central or a State Government authorized by the Central Government or a State Government, as the case may be in this behalf by general or special order has reason to believe that any mineral has been raised in contravention of the provisions of this Act or rules made there under or any document or thing in relation to such mineral is secreted in any place or vehicle, he may search for such mineral, document or thing and the provisions of Section 100 of the Code of Criminal Procedure, 1973 shall apply to every such search.

Rule 23C (1) the State Government may, by notification in the Official Gazette, make rules for preventing illegal mining, transportation and storage of minerals and for the purposes connected therewith.

(2) In particular and without prejudice to the generality of the foregoing power, such rules may provide for all or any of the following matters, namely:-

- a) Establishment of check-posts for checking of minerals under transit;
- b) Establishment of weigh-bridges to measure the quantity of mineral being transported;
- c) Regulation of mineral being transported from the area granted under a prospecting license or a mining lease or a quarrying license or a permit, in whatever name the permission to excavate minerals, has been given;
- d) Inspection, checking and search of minerals at the place of excavation or storage or during transit;
- e) Maintenance of registers and forms for the purposed of these rules;

- f) The period within which and the authority to which applications for revision of any order passed by any authority be preferred under any rule made under this section and the fees to be paid therefore and powers of such authority for disposing of such applications; and
- g) Any other matter which is required to be or may be prescribed for the purpose of prevention of illegal mining, transportation and storage of minerals.

(3) Notwithstanding anything contained in Section 30, the Central Government shall have no power to revise any order passed by a State Government or any of its authorized officers or any authority under the rules made under sub-Sections (1) and (2).

9.7.13 Power of Entry and Inspection: Rule 24 (1) for the purpose of ascertaining the position of the working, actual or prospective, of any mine or abandoned mine or for any other purpose connected with this Act or the rules made there under, any person authorized by the Central Government or a State Government in this behalf, by general order, may-

- a) Enter and inspect any mine;
- b) Survey and take measurements in any such mine;
- c) Weight, measure or take measurements of the stocks of minerals lying at any mine;
- d) Examine any document, book, register or record in the possession or power of any person having the control of, or connected with, any mine and place marks of identification thereon, and take extracts from or make copies of such document, book, register or record;
- e) Order the production of any such document, book, register, record, as is referred to in clause (d); and
- f) Examine any person having the control of, or connected with, any mine.

(2) Every person authorized by the Central Government or a State Government under sub-Section (1) shall be deemed to be a public servant within the meaning of section 21 of the Indian Penal Code, and every person to whom an order or summons is issued by virtue of the power conferred by clause (c) or clause (f) of that sub-section shall be legally bound to comply with such order or summons, as the case may be.

9.7.14 Penalties: Rule 21 (1) Whoever contravenes the provisions of sub-Section (1) or sub-Section (IA) of Section 4 shall be punished with imprisonment for a term which may extend to two years, or with fine which may extend to twenty five thousand rupees, or with both.

(2) Any rule made under any provision of this Act any provide that any contravention thereof shall be punishable with imprisonment for a term which may extend to one year or with fine which may extend to five thousand rupees, or with both and in the case of continuing contravention, with an additional fine which may extend to five hundred rupees for every day during which such contravention continues after conviction for the first such contravention.

(3) Where any person trespasses into any land in contravention of the provisions of sub-Section (1) of Section 4, such trespasser may be served with an order of eviction by the State Government or any authority authorized in this behalf by that Government and the State Government or such authorized authority may, if necessary, obtain the help of the police to evict the trespasser from the land.

(4) Whenever any person raises, transports or causes to be raised or transported, without any lawful authority, any mineral from any land, and for that purpose, uses any tool, equipment, vehicle or any other thing, such mineral, tool, equipment, vehicle or any other thing shall be liable to be seized by an officer or authority specially empowered in this behalf.

(4A) Any mineral, tool, equipment, vehicle or any other thing seized under sub-section (4) shall be liable to be confiscated by an order of the court competent to take cognizance of the offence under sub-section (1) and shall be disposed of in accordance with the directions of such court.

(5) Whenever any person raises, without any lawful authority, any mineral from any land, the State Government may recover from such person the mineral so raised, or where such minerals has already been disposed of the price thereof, and may also recover from such person, rent, royalty or tax, as the case may be, for the period during which the land was occupied by such person without any lawful authority.

(6) Notwithstanding anything contained in the Code of Criminal Procedure, 1973, an offence under sub-section (1) shall be cognizable.

9.7.15 Preventive/Remedial Measures: The provision given in Rule 53 and 57 of H.P. Minor Minerals (Concession) Revised Rules, 1971 is not sufficient to deal the cases and offenders are coming forward for compounding the offences or prefers to contest cases in the court of law. Therefore, forest field functionaries must ensure that cases may not be compounded in case of violation of the provision of Forest (Conservation) Act, 1980 and the Hon'ble Supreme Court order dated 12-12-1996 and 4-3-1997. After taking cognizance, the matter may be taken up with MoEF, Govt. of India under Section 3A/3B of the Forest (Conservation) Act, 1980 read with rule 9 of the Forest (Conservation) Rules, 2003. Thus no mining operation is allowed on forest land in compliance of the Hon'ble Supreme Court order dated 12-12-1996 without prior permission of the Central Govt. under Section 2 of the Forest (Conservation) Act, 1980. Therefore, violation of mining cases or breaking of forest land under the provision of Indian Forest Act, 1927 may not be booked or detected until and unless sufficient material evidences are available and mandatory provisions are fulfilled under Section 30 to 32 of the Act against the offender.

That the field functionaries are advised to take action against the mining mafia or offender under the Mines and Minerals (Development and Regulation) Act, 1957 read with Forest (Conservation) Act, 1980 so that illegal mining could be halted/checked on the forest land including Charagah Billa Darakhatan, Gair Mumkin Khad, Nallah, River Bed/Stream etc. in compliance of the Hon'ble Supreme Court order dated 12-12-1996. All vehicle carrying stone, sand, bajri etc. are required to carry with them "M" Form duly signed by the Mining Officer or authorized officer. Action need to be taken against vehicle not accompanied by 'M' Form signed by authorized signatory as it shall be presumed that the mineral has been brought from forest if the vehicle in charge or owner of the vehicle failed to proof the legal source of material with satisfaction of the forest officer, police officer or mining officer etc. under the provisions of the Mines & Minerals (Development & Regulation) Act, 1957. Similarly in charge check posts should also check all vehicle carrying minerals i.e. Sand, Bajri and Stone etc. for 'M' Form and a record of all such vehicle checked should be maintained at check post's register and fortnightly report may be submitted to Range Officers. With regard to control of mining activities in private areas the forest department has no role to regulate mining on such lands in order to ensure availability of stone/minerals for various department activities except transportation of forest produce under Section 41/42 of Indian Forest Act, 1927. However, in order to control soil erosion and conservation of forests, notification issued under Land Preservation Act, 1978 for felling of trees regulation must be followed. The cutting/felling of trees in private land could be done in accordance with the rules after approval from the Govt. in compliance of the Hon'ble Supreme Court's order dated 12-12-1996 and H.P. High Court order dated 28-5-2008.

9.7.16 Monitoring and review of the mining lease area: Monitoring and review of the mining lease area shall be conducted by Geologist/Mining Officer.

It shall be ensured by the concerned Mining Officer that possession of land or area is handed over to the lessee only after permanent boundary pillars are raised. In fact this condition is being now incorporated in the grant order by Geologist, Department of Industries, H.P.

The renewal of the mining lease shall be based on monitoring and review reports of the officers of Geological Wing, Department of Industries, and H.P.

9.8 Poaching:

9.8.1 General: Poaching of Animals for meat and sometimes as trophy in the division is not very common. The H.P. Wild Life (Protection) Rules, 1975 provides shooting and Hunting Rules which are applicable to the RF and DPF in the State vide Notification No. 6-9/73-SF dated 24-2-1975. Now hunting and shooting in schedule I, II, III & IV is prohibited under the Wild Life (Protection) Act, 1972. Hence, there is a complete ban on hunting in the State since 1983 vide H.P. Govt. Notification No. 6-2/73-SF-II dated 24-5-1983. In certain cases where the wild Animal becomes a man eater, dangerous to human life or is so disabled or diseased as to be beyond recovery then it can be killed any wild Animal specified in schedule after seeking permission from the Chief Wild Life Warden to this effect under Section 11 (1) (a) of the Wild Life (Protection) Act, 1972 that such Animal cannot be captured, tranquilized or translocated. And under Section II(1) (b) a person having obtained a permit therefore would hunt any wild Animal specified in scheduled II, III & IV, when it has become dangerous not only to human life, but also to property including standing crops on any land or is so disabled or diseased as to be beyond recovery. It is true so far as wild Animal specified in schedule-I, is concerned, a person cannot obtain permission to hunt it even if it becomes dangerous to property including standing crops on any land from that it is not possible to say that it has abridged the right to protect one's property from wild Animal specified in schedule-I under the Wild Life (Protection) Act, 1972.

9.8.2 Detection of Offences: Section 50 of the Wild Life (Protection) Act, 1972 makes it clear that police officer or forest officers are empowered to investigate the offence and search and seize the offending articles. Section 51 provides for penalties which would indicate that certain offences are cognizable offences meaning thereby police officer can arrest without warrant. Sub Section (5) of Section 51 provides that nothing contained in Section 360 of the Cr. P.C or the Probation of Offender Act, 1958 shall apply to a person convicted of an offence with respect to hunting in a Sanctuary or a National Park or of an offence against any provision of chapter-5A unless such person is under 18 years of age. The aforesaid specific provisions are contrary to the provisions contained in Cr. P.C and that would prevail during the trial court. However, from this, it cannot be said that operation of the rest of the provisions of the Cr. P.C are excluded. The power to compound offences is also conferred under Section 54 of the Act provided that no offence, for which a minimum period of imprisonment has been prescribed in Section 51, shall be compounded.

9.8.3 Preventive / Remedial Measures: The cases pertaining to poaching of wild Animals are dealt with promptly under the Wild Life (Protection) Act, 1972. The Wild Life (Protection) Act, is not self sufficient for dealing all legal problems relating to poaching & trading of trophy etc. so it becomes quite often necessary to invoke the provision of Indian Penal Code also. This open nation forest wealth including wild life can be saved by adopting various following measures.

- i)
- ii) To check the illegal trade of timber and poaching, R.O and Patrolling staff must be provided vehicle, mobile phone and gun etc. and also immunity under Section 197 of Cr.

P.C. By an order of the Supreme Court dated 22-8-1997, it was directed that in order to effectively control the growing menace of poaching in the Sanctuaries/National Parks or forests, the Central Govt. as well as the State Govt. should ensure that the forest guards in Protected Areas are provided modern arms. Communication facilities viz, wireless sets and other necessary equipments in that regard within six months from the date of order.

- iii) DFO/ACF/RO must conduct night raids/Nakas to check illegal trading & poaching in a planned manner regularly especially on Nepali Majdoor, Hydro power projects employee and labour and also any suspected person in forest.

9.8.4 Penalties, Bail and Cognizance of Offences: Any person who contravenes any provision of this Act or any rule or order made there under or who commits a breach of any of the conditions of any license or permit granted under the Act, shall be guilty of an offence against this Act, and shall, on conviction, be punished with imprisonment for a term which may extend to three years or with fine which may extend to twenty five thousand rupees or with both order Section 51 of the Act.

Provided that where the offence committed is in relation to any Annimal specified in schedule I or Part-II of schedule-II or meat of any such Annimal or Annimal article, trophy or uncured trophy derived from such Annimal or where the offence relates to hunting in a Sanctuary or a National Park or altering the boundaries of Protected Areas, such offence shall be punishable with imprisonment for a term which shall not be less than three years but may extend to seven years and also with fine which shall not be less than ten thousand rupees.

Provided further that when any person accused of the commission of any offence relating to schedule-I or Part-II of schedule-II or offences relating to hunting inside the boundaries of the Protected Areas, is arrested under the provisions of the Act, then notwithstanding anything contained in the Cr. P.C, 1973, no such person who had been previously convicted of an offence under Section 51-A of the Act shall be released on bail unless ____

- (a) The Public Prosecutor has been given an opportunity of opposing the release on bail, and
- (b) Where the Public Prosecutor opposes the application, the court is satisfied that there are reasonable grounds for believing that he is not guilty of such offence and that he is not likely to commit any offence while on bail.

The Act is intended only for the protection of the wild Annimals. Thus, there is no major differences in respect of such offence in “Protected Area and Non Protected Areas” except bail granting procedure etc. under the Wild Life (Protection) Act, 1972. Cognizance of offence order Section 55 of the Act should be taken only a complaint filed by an officer not below the rank of Deputy Conservator of Forests or DFO or any other officer authorized in this behalf by the State and Central Government otherwise, no court shall take cognizance of any offence against the Act.

CHAPTER X

THE JFM/PFM (OVERLAPPING) WORKING CIRCLE

10.1 General Constitution:

This Working Circle includes all RFs, I & II Class DPFs and III Class listed UPFs or forest land near to the habitations, where active participation of local people has been taken in the past along with potential new areas. It is an overlapping Working Circle and fulfils the objectives of the National Forest Policy 1988 by involving the rural communities living close to forests ecosystem. This Working Circle also lays emphasis on man-forest interface and canalizing human resources for conservation of forests and vice versa. The National Forest Policy, 1988 emphasis on participatory management of forests and wild life. It also specifically mentions that to achieve the objectives of the Policy, a massive people's movement should be created, especially involving women. In pursuance of National Forest Policy, the Govt. of India, on 1st June 1990, issued policy instruction to all State Governments supporting greater participation of village communities in regeneration, management, protection of forests and conservation of natural resources. This led to the initiation of Joint Forest Management (JFM) programme and importance of the programme is evident from the fact that the Government of India has constituted a "JFM Network" with the Inspector General of Forests, Govt. of India as the Chairman. The objectives of the network are:

- (i) To act as a regular mechanism of consultation between various agencies engaged in JFM work in the country, and
- (ii) To obtain constant feedback from various stakeholders on the JFM programme for proper policy formulation and suitable direction to States.

Keeping with the above notification, the Gump has formulated policy vide its No. Forest (C) 3-4/80-V dated 12-5-1993 on the involvement of people for participatory forest management. Ever since the village communities are being involved by the forest department to further the aim of protection and management of forests and continuation of forest cover. The recognition of the link between socio economic incentives and forest development has been singularly responsible in eliciting the community participation. A new resolution of the Ministry of Environment and Forests, Govt. of India, dated February 21, 2000 has further strengthened the JFM programme is:

- (a) Legal backup to the JFM committees
- (b) 50% members of the General Body should be women.
- (c) Extension of JFM in good forest areas, with sharper focus on activities concentrating on NTFP management.

Though, no separate and exclusive Working Circle has been proposed in this Plan under which the JFM activities are to be confined but this Working Circle overlaps with other Working Circles of this Working Plan. It is suggested that all the activities as far as possible, should be carried out after involving local people but the general prescription of Working Plan will be adhered to. The species of local importance should be preferred in Afforestation activities which should have meet out the basic needs of local people and their livelihood issues.

10.2 Emergence of Joint Forest Management:

In the colonial India the princely rulers proclaimed the power of eminent domain over the territories they ruled and specified hunting rights for themselves in the forests. Traditional customary rights of local people living in and around forest were respected and this enabled them to utilize the produce of the forests for their livelihoods. During the 19th and the early part of the

20th century these rights were modified, reduced and in some cases eliminated at the state to cover control of forest resources. This was finally consolidated in 1927 with the enactment of the Indian Forest Act, which is still in force today.

A related development was the emergence of “Scientific” forest management by the state, which had the primary objectives of production forestry. Local people’s needs were provided through rights. The use of forest resources has also been influenced by the rapid increase in population in recent decades. With the explosion of population as well as expansion of industry, demand of timber and fuel wood increased dramatically, resulting in uncontrolled exploitation of forests at an ever increasing pace. By the seventies, it was understood that treating forests products as a national resources for industrial development without proper concern for local demand would result in total destruction of forests, which, in turn would endanger environmental security of the country. So, a modified approach to forestry on the international scene, which in India was labeled Social Forestry, was adopted in the 1970’s. This attempted to address the forest based needs of local people more directly but did this within the existing framework of State control through the forest departments. The forestry sector was dominated by this approach to forestry which can be rather starkly characterizes as forestry for the people by the State on the People’s land. Although not as successful as anticipated, many valuable lessons were learnt and this Social Forestry legacy is being transformed into a more meaningful partnership between local communities and the forest departments as Joint Forest Management.

As pressure on the forest resource mounted in the 1960’s and 1970’s, foresters in different parts of India realized that conditions had changed to such an extent that the forest protection model they had inherited would not work. Rather than protecting the forests from the depredations of the local people (as the model described things) this minority of forward looking foresters realized that the local communities had to be directly involved in and benefit from forest protection and management.

The lead in experimenting with this was taken during the 1970’s in West Bengal, Haryana and Gujarat where forests protection communities were formed and given the responsibility of protecting degraded forests, department land from illegal cuttings, fires, over grazing, and encroachments. In return they were granted access to a range of non timber forests products and in West Bengal to 25% share of the returns from the coppice fuel-wood harvest in regenerated Sal forests. Other protection movements also developed at the same time in Uttar Pradesh, and many tribal forest protection communities emerged spontaneously in part of Bihar, Orissa and M.P.

The successes that these “experiments” generated gradually begin to influence opinion throughout in India and the forestry debated reached substantial proportions in the 1980’s. This culminated in the issue of a new commercial value and concentrated on ensuring environmental stability, maintenance of ecological balance and specified that the domestic requirement of tribal and the poor living within the vicinity of the forests should have the first charge on the forest produce.

In 1990’s this was complemented by another Govt. order directing all states to undertake participatory forest management on degraded forest land based on the experiences of states such as West Bengal, Gujarat and Haryana. This order also encouraged forest departments to involve NGO’s as intermediaries and facilitators.

This was the first time that the rapidly developing Joint Forest Management had been given official sanctions and marked a watershed in India’s forestry development. Since that time 15 states have issued Govt. orders for the implementation of JFPM programme. These JFPM initiatives have many of the following characteristics in common:-

- (i) The formation of local community based institution to participate with the forest department in forest management decision making;
- (ii) Rules and regulations about responsibilities and sharing decision making;
- (iii) Involvement of NGOs particularly in documentation, training, research and community level organizing and facilitation;
- (iv) Reorientation and training of forest department staff and local communities.
- (v) The joint preparation of micro-plan for forest management which often or the basis of formal agreements between the forest department and the local institution;
- (vi) The formation of state level working groups to co-ordinate their Joint Forest management;

10.3 The Concept of Joint Participatory Forest Management:

The concept of Joint Participatory Forest Management is an intervention to evolve organised and collective thinking on the issues of forest management keeping in view the fact that the forest resources are limited and the claim over these are varied. No single solution can satisfy the needs of all. The philosophy aims at involving all the stakeholders in resource generation activities through motivation, active involvement in the process of management and sharing of benefits through adequate institutional arrangement.

Efforts were made under the Social Forestry project in the late eighties to raise rural fuel wood plantations to cater to the requirement of people, but in this scheme only limited success was achieved in Apple belt areas of Himachal Pradesh. But in the lower areas this Social Forestry scheme has achieved better results. In pursuance of this project of “Van Lagao Rozi Kamao” scheme launched by Forest Department during the early nineties also could not take off very well in apple belt area as compare to low lying areas of H.P.

10.4 Joint Forest Management in H.P:

The concept of people’s participation in forests of H.P. started long back with formulation of Forest Settlement Reports (FSRs) deriving powers from Indian Forest Act. These reports entrusted rights in villages, adjoining to forests such as Timber Distribution (TD), collection of fuel wood, from dead and fallen trees or by lopping of branches, fodder from leaves and grass, NTFPs etc. Almost all villages in the State have been entrusted with rights and concessions. This was accomplished much before enactment of National Forest Policy, 1988 and Scheduled Tribe and Other Traditional Forest Dwellers (Recognition of Rights) Act, 2006 (in brief known as FRA, 2006). There is however, a stipulation for getting rights in that people will perform certain duties to conserve and protect forests otherwise their rights can be suspended. This was simplest and best way of soliciting participation and co-operation of communities in forest management.

The actual implementation of concept of JFM in H.P. was initiated under World Bank aided Integrated Watershed Development Project, (Kandi Project), German aided Indo German Changer Project and schemes through village level institutions known by various names such as Village Development Committees (VDCs), Village Forest Development Committees (VFDCs)/ Village Eco – Development Committees. VFDCs also known as JFMCs (as per MoEF, GOI guidelines have also been involved in executing of various centrally sponsored schemes (CSS) including National Medicinal Plant Board (NMPB) supported project in Kullu, Kangra, and Chamba and Sirmaur districts.

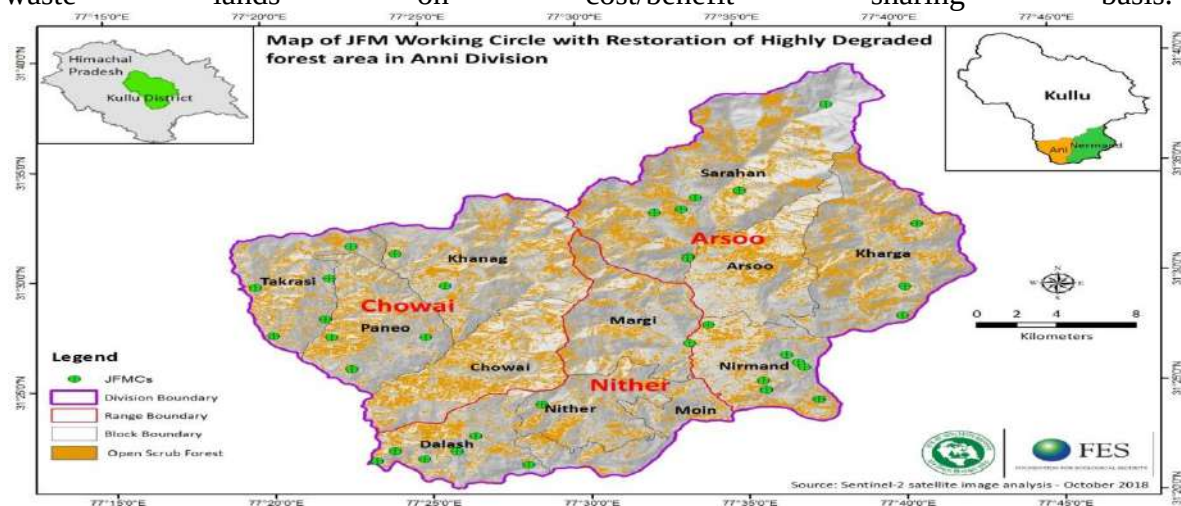
The implementation of JFM through Panchayat level institutions under H.P. PFM Regulations, 2001 was first initiated under DFID funded H.P. Forestry Reforms Project through constitution of Village Forest Development Societies (VFDS) at Panchayat wards level. Another

State sponsored scheme based on these regulations with the name Sanjhi Van Yojna, 2001 was also initiated for sustainable management of forest resources.

In H.P. World Bank aided social Forestry projects known as umbrella project was launched by the year 1985. Under this project a new scheme “Van Lagao Roji Kamao” was launched in the year 1992 as participatory mode of management in which Van Sewak were selected from amongst poor families and a plot of 2 ha were allotted to them for Afforestation on forest Govt. land. Besides these pressure cookers & chullah were distributed or subsidized rates to the local people as fuel saving devices. This scheme could not take off very well in apple belt area of HP, but in the lower areas this scheme has received good results.

The Sanjhi Van Yozna as a community based Afforestation scheme was launched by the HP Govt. on 25th December, 1998. Under this scheme the communities as well as the NGOs are to be involved in the protection of the existing forest wealth and also to participate in holistic rural development. The main objectives of this scheme were:-

- a) Involvement of grass-root level institutions e.g. Gram Panchayats, Mahila Mandals, Yuvak Mandals, VFDCs, NGOs etc. in eco-restoration.
- b) Regeneration of degraded forest areas through community involvement.
- c) Creation of social assets for the benefit of the communities.
- d) Increasing the productivity of the forest areas by improvement of nursery stock through adoption of modern nursery techniques.
- e) Re-orientation of forest staff for facilitating community participation.
- f) Generation of employment opportunities in rural areas.
- g) To bring more area under tree cover by encouraging rehabilitation/plantations of private waste lands on cost/benefit sharing basis.



In support of the participatory management the State Govt. had issued a notification vide No. Fts.II (B) 15-10/87 dated 23rd August, 2001, called the Himachal Pradesh Participatory Forest Management Regulations, 2001 which has been reproduced as **Appendix No.-XXVI**. These rules were applicable to such government land and forests, including common lands, where participatory management was envisaged.

10.5 Formation of Forest Development Agency (FDA):

The Ministry of Environment and Forests, Govt. of India has launched new scheme called Samanvit Gram VAnnikaranSamridhiYojna (SGVSY) under the overall supervision of the FDA (Forest Development Agency). Under this new scheme committee will form a federation and a proposal in the form of project for:-

- i. Integrated Afforestation and Eco-Development Project.
- ii. The Area Oriented Fuelwood and Fodder Project Scheme.
- iii. The scheme for Development on Non Timber Forest Produce including Medicinal plants.
- iv. Scheme for Associate of Scheduled Tribe and Rural Poor in regeneration of degraded forests.
- v. Eco-Development in and around National Parks and Sanctuaries.
- vi. Plantation programme through Ecological Task Forces will get discontinued.

10.5.1 Objectives of FDA: The main objectives of the scheme are:

- i) Arrest and reverse the trend of forest degradation due to the unsustainable removal of forest products by communities living in and around the forest by making the community responsible for management and monitoring of the forest;
- ii) Provide sustainable and assured employment opportunities to the tribal and other weaker sections of the rural populations in such areas all around the year; and
- iii) Create permanent community assets for each population, which would contribute to overall eco-development in the target areas.
- iv) To involve the village community for execution of the scheme and make them to exercise fully participatory management.
- v) Create an effective mechanism in order to ensure that the medium of the FDA is used to reach the beneficiaries by other government departments also.

10.5.2 Salient Features of FDA

1. The scheme will aim at providing employment to the local village community through the Afforestation programme thereby creating valuable forest assets for the village community and other permanent community assets for overall eco-development of the target communities/villages.
2. “Federation of Forest Committees (F.F.C.)” is proposed to be constituted at the Territorial Forest/wildlife Division level. Each of these Divisions will constitute the planning unit or the project area for the Forest Development Agency (FDA). On an average, about 25-30 village would be covered under the SGVSY within the jurisdiction of each FDA and all households needing income augmentation will be targeted. In selecting the village, the criteria will be:
 - a) Preponderance of SC/ST population.
 - b) Willingness of people to participate in forest conservation efforts.
 - c) Existence of FPCs/EDCs
 - d) Extent of degraded forestland.
 - e) Degree of dependence on biomass resource, etc.

3. SGVSY will be a demand driven scheme with no fixed earmarking of funds for any particular State of FDA. The requirements of funds would emerge through the micro-planning and Participatory Rural Appraisal (PRA) exercise to be undertaken by each FDA for preparation of an integrated project. The project would seek to establish a link between the level of dependence of the village on forests, the absence of sustainable livelihood opportunities, the need for creation of community assets and requirement of ecological regeneration to the undertaken in and around the forest areas.
4. The creation of FDA and adoption of JFM Resolution will be a pre-requisite for the introduction of this scheme. Each FDA would be headed by the respective Territorial/Wildlife Conservator of Forests with the respective Territorial / Wildlife DFO as its Member-Secretary-Cum-Chief Executive Officer. The other members will include representatives of the village forest committees (VFDs / Eco-development committees (EDCs). The FDA will be registered as Federation of Village Forest Committees/Eco-Development Committees under the Registration of Society Act, 1860. Each village within the jurisdiction of village forest committee (VFC / Eco-Development Committee (EDC) will be constituted in each village following bodies. The local forest block officer/Forester will be ex-officio member Secretary of the VFC/EDC.

Executive body member of the FDA shall be ex-officio member of the General Body of FDA, which would be headed by the respective Conservator of Forests. The SGVSY will be implemented under the overall supervision of the FDA at Division Level and in the State Level for implementation, monitoring and evaluation State Forest Development Agency is constituted by the State Govt., the VFDs / EDCs will be responsible for actual implantation of various activities in the field. The FDA at Division level will co-ordinate the project and provides technical and administrative guidance throughout its implementation of programme.

Periodical evaluation studies on the implementation of SGVSY should be got done by the NAEB, Govt. of India through reputed institution, organization and NGOs and the issues which emergence from such evaluation and monitoring, should be used for taking remedial action for improving the implementation of the project.

10.6 Special Objective of JFM: The basic objects of Joint Forest Management are given below:-

- (i) To evolve consensus on the basic issues to conservation of soil, water and forest resources.
- (ii) To provide effective and immediate treatment for barren, wastelands, or degraded protected forests situated near villages through protection, Afforestation, pasture development, soil conservation by active participation of local people.
- (iii) To maintain the environmental stability through preservation and wherever necessary, restoration of the ecological balance that has been adversely destroyed by depletion of the forests through involvement of local people in resource management.
- (iv) To augment fuel wood, fodder and small timber production for use by local people.
- (v) To convert a hostile population living in the fringes of forests areas into friends and ultimately into resource managers and resource users.
- (vi) To evolve policy and law, this will help in the continuity in the planning and implementation.
- (vii) To make environment conducive for the adoption and implementation of the JFM in the State and Area.

10.7 The World Bank aided Mid – Himalayan Watershed Development Project was launched in the State in 2005 and ended on 31.03.2017. It was implemented under the leadership of HPFD. It has been implemented through community driven approach through Gram Panchayat (GP) by devolution of powers to these constitutional bodies. It was decided to

strengthen their capacity to yield sustainable impact rather than building village level committees which could disappear after project conclude. The components of the project were implemented by preparing GP Watershed development and livelihood plans (FPWDLPs) after these were approved by the Gram Sabha (GS) and agreement signed between GP and Watershed Development officer (WDO), to have flexibility in improving the GPWDLP, these could be revised after every 6 months. The institution within the GS included SHGs, UGs, CEGs etc. that provide platform for managing natural resource and promoted these for livelihood improvement. The communities were further empowered through capacity building, partnerships and accountability mechanisms. The performance was evaluated (PME), through traditional implementation focused systems emphasizing project outcomes. Thus, it can be seen that people's participation was ensured not only at the planning level but in implementation and evaluation through constitutional bodies of GP.

10.7.1 Similarly, **Swan River integrated Watershed Management project** funded by JBIC in Una district which ended on March 2017, was implemented under the leadership of FD through 95 Panchayat Development Committees (PDC) registered under Societies Registration Act, 1860 (Table 1) Wherein general house of the PDC approved consolidated ward level and Panchayat level plans. PDC and Watershed Development Committees (WDC) also monitored the implementation of these plans. SHGs, UGs were formed for livelihood generation for increased income of farmers through utilization of agricultural, horticultural, Animal husbandry and forestry resources in raw form or through, their value addition and marketing. these two projects were implemented with GP as nodal to implementation, had forestry component but were based on natural resources with watershed management approach unlike above referred to forestry based projects mostly implemented on the basis of cluster of village approach at ward level through HP PFM Resolution, 2001.

10.8 Strategic Approach of Participatory Forest Management (PFM) in Himachal Pradesh (H.P.): Forest government under JFM resolution and guidelines of MoEF, GOI and those of State governments have been carried out through top down approach with uniform models of implementation, leaving little scope for integrating specific local needs and land use wise adjustments. JFM in present shape lacks legal sanctity, is incompatible with forest laws, lack clarity on benefit sharing arrangements has inadequate linkage with decentralized framework of local self –governance brought about through Panchayati Raj Act, 1992 and PESA, 1996. Non-conformity with FRA, 2006 and rules made therein so also the results that were expected through three decades of its implementation are not forthcoming.

10.9 Implementation of JFM in Anni Forest Division: The JFM approach has been implemented in this division under different projects viz social forestry umbrella project, Sanjhi Van Yojna, and FDA etc. The micro plans were prepared in accordance with the project philosophy and works executed through VFDC/VFDS, JFMC etc.

The activities like soil conservation, Afforestation, village development activities, fire protection, grazing etc. have been under taken in the past but almost in all case the participation of local remained up to fund flow only. Most of the committees are totally inactive but some committees are active and play vital role in protection and management of forest. There is a need to revive, activate and involve this rural community in forest management activities.

The FDA Project was implemented in this division. Under FDA total 35 numbers of JFMC and VFDS (28 No's JFSC & 7 No's VFDS) were constituted and registered as per instructions. The works were executed as per micro plan and MOU. As on today all the JFMCs and VFDSs are

totally inactive. There is a need to revive and activate of JFMCs and VFDSs which have become inactive for the past quite some time. Efforts may be made to identify the potential areas where more JFMCs and VFDSs can be constituted for adopting PFM approach for the protection and management of the forests after taking confidence of Panchayat concerned.

The Japan Aided Project (JICA) has now come into force and under this project, the following VFDSs have been constituted as per detail is tabulated in Table No.10.1

Table No.10.1

List of VFDSs under JICA			
Name of Range	Name of VFDS	New Proposed VFDS under JICA	Registration and Year of Constitution
Arsu	-	7 No's	Yet to be registered
Nither	Khalair	-	22/2020/MLC dated 18.02.2020
	Nauni	-	20/2020/MLC dated 18.02.2020
	Sharshaya	-	19/2020/MLC dated 18.02.2020
	Jajhaar	-	23/2020/MLC dated 18.02.2020
	Katmore	-	21/2020/MLC dated 18.02.2020

(Source: Record of DFO, Anni).

Under the JICA (The Japan International Cooperation Agency) project, in the first phase, only 5 No.s of VFDS has been registered in Nither Range and 7 No.s of VFDSs will also be constituted and registered in Arsu Range in 3rdPhase.

10.10 Constraints to Participatory Management:-There is a general lack of enthusiasm in embracing the idea of shared management in the forestry sector by the people and though some inroads have been made with the communities, a lot more thrust needs to be given to popularize the concept among the masses. The causes for this lack of encouraging response among people are:-

- There is a general apathy of the youth to participatory programmes related to rural sector because with acquiring college education all youth strive for white collared jobs and anything that keeps them back in villages does not enthuse them.
- Lack of proper education of the government programmes and insufficient extension activities of the forest department.
- Long gestation period of forestry activities.
- Too much dependence of the public on government and subsidy, cost sharing in such activities is generally not accepted.
- Reluctance of government functionaries to hand over control of resources to people or even partially share their “power” with the people.
- Lack of proper legislation on participatory management and usufruct sharing.

- g) Need to promote income generating activities under JFM programmes.
- h) Frequent changes in schemes and discontinuation of old schemes which leads to mistrust of people in government,
- i) JFMCs members found difficulties in organizing and maintaining the paper works like opening accounts in banks, audit work, submission of progress report to FDA and similar other activities as the formats provided to them were very time taking and clumsy.
- j) Political rivalry at village level among communities created hurdles in smooth implementation of the projects.
- k) Flow of fund was not smooth. This resulted in late payment of wages to workers. This created unnecessary hassles and embarrassment to the project implementing authority. On the other hand it was difficult to hire village labourers on the prescribed wage rate of the government. Majority of labour community demanded increase in wage rate.
- l) Official bottleneck at both ends namely, State level as well as NAEB level created unwarranted delay in paper work and fund release.

10.11 Scope of JFM:

10.11.1 There is tremendous scope for the JFM activities in the division. All the forests allotted to the Plantation, NTFP and Forest Protection Working Circles are suitable / potential sites for Afforestation, soil conservation, grassland improvement, NTFP development besides other forestry operations.

10.11.2 Identification of JFM Areas: The degraded forest areas as well as community land located in the vicinity of the villages are potential sites for JFM implementation. The deficiencies and strengths of these with regard to soil condition, water availability, grazing pressure, fuel wood production and requirements need to be understood. The Divisional Forest Officer can include or exclude any areas while implementing the JFM approach with the consultation of Panchayat concerned. The following broad guidelines have been devised for selection of potential (pilot) area:

- i) Re-orientation of front line staff for facilitating community participation in forest protection & management
- ii) Interest of local people in involvement in joint forest planning, management and decision making.
- iii) Existence of ongoing 'successful' collective land management systems;
- iv) Resource poor areas where there are constraints on the forest and land farming system in term of access to grazing and forest products;
- v) Relatively homogenous local communities.

10.11.3 Potential Activities of JFM Committees: The JFM/PFM committees are the future agencies of the forest development, conservation and expansion. The potential activities to be executed through the JFMCs can be:

- a) Afforestation activity (both departmental, MGNREGA and Green India Mission).
- b) Soil and water conservation through treatment of macro and micro watershed in the catchments.
- c) Recharging of water bodies like Bawaries, Water pond and underground water.
- d) Minor construction works of inspection and bridle paths and buildings.

- e) Awareness programme for forest protection, fire protection, propagation of medicinal herbs on large scale.
- f) Livelihood options like Bee keeping, Khadi (Weaving), Medicinal Plant cultivation, extraction of oil from Chulli, Behmi and vermin-composting etc., through effective training.
- g) Collection, value addition and marketing of NTFP.

10.11.4 Preventive/Remedial Measures:

- i) To ensure more participation of the local community, there are needs to give training on plantation techniques, protection; of the fenced areas for this purpose special funds need to be created at the JFMC level. To provide technical knowhow to the executive body of JFMC to carry out its responsibilities.
- ii) Field staffs of the forest department are also required to be trained regarding the working procedure of the FDA. Field level training of front line staff should be imparted to through participatory workshops which will encourage and experience based learning. A series of workshop should be organized at different level such as Circle level, Divisional level, Range level, and Beat level.
- iii) The local people are linked with the FDA programme just to earn the wages. It is suggested that more sensitization programme may be conducted at JFMC level. So that local community will come forward to protect the enclosed area from grazing and fire incidence.
- iv) The local people can be given training on forest based minor enterprises. And involvement of grass root level institutions e.g. Gram Panchayats, Mahila Mandals, Schools, VFDCs, NGOs, etc. in Eco-restoration.
- v) Women participation in the FDA works must be given priority.
- vi) The field staff and JFMC member's needs to be given training on maintenance of record and account to avoid any litigation or audit point of view etc.
- vii) The exposure visit of the farmers needs to be conducted where Kandi Project, Watershed Management Project, and any other people participating project is successful in State or outside the State.
- viii) Medicinal plants needs to be given due importance.
- ix) Local people are imparted training in nursery growing of forestry and M&AP, so that they can sell the same to the Forest Department and generate income for their families.
- x) Proper documentation regarding all the different project activities along with photographs is properly maintained to compare the impact assessment.
- xi) Fire case shall be registered with the police under Section 435 of IPC to punish unscrupulous persons who set the fire to forests or plantation area willfully, and with ulterior motives.
- xii) Number of assets of immediate needs have to be created through EPA in all the villages.
- xiii) Legal back up to JFM Committee.
- xiv) Linking village Protection Committee with industries for the sale of produce or JFM product etc.
- xv) Detail projects to be prepared for assistance under FDA, MGNREGA and Green India Mission for JFM Areas.
- xvi) Silviculture prescription given in the Working Plan shall be followed for the management of JFM forests through sustainable stake holders etc.

10.11.5 Strengthening of Joint Forest Management:

- (i) JFM should focus in and around pockets of poverty i.e. remote forested areas (better forest) and where livelihood dependence on forests is high. This would entail several genuine joint management activities (other than plantation) like collective protection

against illicit felling, fires, poaching etc. Issues of Rights, equality and benefit sharing are better addressed and conflicts resolved.

- (ii) In participatory approaches the process is more important than achieving targets. Choosing and regularly training the right persons for the job is therefore critical.
- (iii) Sharing of removals, minor development activities and salvage fellings with VFDSs are necessary to establish long term stake of local communities in JFM.
- (iv) Continual policy and rules adjustment and calibration to promote better market returns for wood and non-wood base enterprises. Example, the recent decontrol of bamboo trade and transit and efficient markets for value added products.
- (v) Local leadership has to play a critical role in JFM. The successful examples of JFM or CFM show that local leadership roles have been crucial in making the change. It could be an enlightened, accepted local person, and elected representative, a dedicated NGO/CBO or even a committed forest officer. This is also important for sustainability of groups.

10.11.6 Role of Women in JFM: Women in general and those of rural areas in particulars play an important role in maintaining the family and thereby improving the village economy. It is often said that if a women is developed, the entire family is developed because it is only women who is most intimately connected or dependent on forest for their basic needs. Thus, the woman as a mother in the house-hold assumes the role of efficient manager and undertakes various functions for the welfare of the family.

The entire village abutting the forests actually depends on the forests for the tree based needs in the form of small timber, fuel, fodder, green leaf manure etc, unlike the women in urban area; the rural women are solely dependent on the forests for their fuel needs to a very large extent. It is the woman who collects fuel wood and dried sticks for cooking purposes from forests. Many women also bring fuel wood from forests for their sustenance through wage earning, as they do not have any other alternative sources of employment. The rural women take care of cattle grazing in the forests. In many parts of the country women collect potable water from perennial jungle streams passing through the forests.

The women's attitudes towards forests has been changing conservation strategies at the National and State level. In the Himalayan region, rural men are very much interested in raising pine trees so as to get quick money at the time of harvests. On the other hand the women are interested in raising broad leaved trees like, *Olea cuspidate*, *Acer* species, *Alnus nitida*, *Grewia oppositifolia*, *Pistacia integerrima*, *Albizia stipulata* etc. which improves the diversity and result in perennial flow of water in mountain streams in the region and the woman have succeeded in this sphere of activity.

In short, women can play a dominant role in the implementation of J.F.M. because of their intimate association with forests. They depend on forests for various livelihood security services; they must get equal representation in the village Forest Councils and have a choice in the decision making viz. in the selection of species and other silvicultural measures for upgrading the degraded forests vegetative cover and bio-diversity.

10.12 Project Impact & Benefits:

This project will maximize and sustain the impact by developing sustainable institutional Framework and capacity building at community level and addressing issue like excessive biotic pressure for fuel wood, fodder, grazing, timber, large population of unproductive cattle unstable

terrain and decreased forest cover that have led to unsustainable and inequitable exploitation of forest resources.

This project will have a positive impact on the regeneration and sustainable exploitation of medicinal herbs by focusing on their in-situ as well as ex-situ propagation and scientific harvesting. This project will also have a positive impact on reversal of land degradation process by control of overgrazing, bio-diversity conservation and soil conservation.

By developing fuel wood and fodder plantations on the barren lands near the village, this project will reduce the pressure on existing forests for their products, thus revitalizing these forests to good health.

The plantation so raised under the project will increase the forest cover thus progressing towards the goal of bringing two-thirds of the area in the hill under forest cover as envisaged in the National Forest Policy 1988.

This project will directly benefit poor forest dependent communities in the project area by evolving them to improve their livelihoods through increasing sustainable yields from forest lands and through developing other livelihood options which will ultimately reduce their dependence on the forest resource.

By the end of the project community level institutions in the shape of JFMCs will be in place to manage natural resources through linkages with forests and other line department. This project is likely to have a positive impact on the environment if the improved or alternative livelihoods are based on sustainable utilizing and access to natural resources.

10.13 Monitoring & Evaluation:

The progress of implementation of the FDA will be monitored continuously through reports and physical verification of forest works. At the Centre Govt. level the project will be monitored on the bases of quarterly progress reports and through periodic field inspection by the officials of NAEB or its authorized evaluation agencies.

Copy of the letter from PrCCF-cum-CWLW, Wildlife Wing, Shimla H.P.

HIMACHAL PRADESH FOREST DEPARTMENT
WILDLIFE WING

No. Working Plan/WLM/ 9572
Dated, Shimla the 24/09/2016.

From: Pr. CCF (Wildlife) and
CWLW HP, Shimla-171001.

To: WPO cum DFO Anni .

Subject: Writing of working plan of Anni Forest Division.

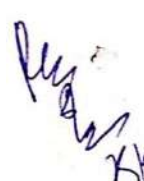
Memo:

Reference your office memo No.361 dated 19.04.2016 on the subject cited above.

2. The corrections as suggested by this office in chapter XI pertaining to Wildlife Management has been incorporated in the Working Plan documents together with eight number of Monkey Sterilization Centre in the state under Para 11.12.1 has been incorporated now. Therefore, the Wildlife Chapter of the Working Plan is hereby approved by the undersigned.

Encl: As above.


Pr. CCF (Wildlife) and
CWLW HP Shimla.


2262 Date 29-9-16
D.F.O, Anni at Lohd

CHAPTER-XI

THE WILDLIFE MANAGEMENT (OVERLAPPING) WORKING CIRCLE

11.1 General constitution:

This working circle is constituted for emphasizing the necessity of conservation of wildlife and collection of information for better management of wild life. The whole tract dealt under this Working Plan is ideally suited for a variety of wild Animals and birds since the forests are distributed from low elevation to the high Alpine pastures and snow bound areas. Therefore, this Working Circle overlaps all other working Circles. In Present scenario, wild life includes Faunal as well as floral life on the Earth. It is a biodiversity as a whole, which makes wild life's worth. Wildlife conservation cannot be executed in isolation. Areas outside the protected area network are often vital ecological corridor links and must be protected with a view to ensuring the ecological and environmental security of the State. Thus conservation efforts in Anni Forest Division by virtue of its proximity to the Great Himalayan National Park assume profuse significance. The Forests of Anni Division are lying contiguous to the Great Himalayan National Park which is rich in wild life such as Tarala, Deem, Tharla, Paneo, Takrasi, Margi, Katmore, Bagasarahan etc. As these forests are not easily accessible and are far away from habitation, wildlife by and large finds a free and peaceful life in these forests. There is frequent seasonal migration of Animals in large herds from the above park to these areas and vice versa. The trees and lush vegetation present in these reserves along with the perennial water sources and grass lands create an ideal habitat for wildlife especially for Western Tragopan, Himalayan Tahr, Musk deer & Emu etc.

11.2 Importance of Wild life:

Due to the spread of education and awareness, there is a growing concern for protection and preservation of wild life and there is a steady opposition to their killing and to the destruction of their habitat. With the increased availability of information on biodiversity, a wide spread and intelligent recognition of the immense value of the myriad species of plants and Animals to the humankind has been established. Forests provide an excellent opportunity to a man to study living beings in their natural environment. In addition to this there are material consideration as well, especially ecological. These Animals and plants through the intricate food web maintain the delicate balance of nature and any breach in this chain can cause over population of any one species, which may prove detrimental to human interests. Wild life is a source of sports and enjoyment to people and fetches revenue to State as well. If the people are led to know the importance and worth of wild life they will appreciate it as an asset and put in efforts to conserve them.

Faunal and Floral life (Biodiversity) play a significant role in maintaining the balance of nature. The value and importance of it from scientific, aesthetic, economic and recreational point of view is immense and is recognized world over and therefore, adequate protection, and the scientific management of it is absolute necessity. In wider perspective, it is Biodiversity conservation and development and also its further research, which makes it more important.

This region as a whole has come under the enormous pressure from biotic interferences both from the ongoing practice of traditional livelihoods, such as seasonal grazing, hunting and collection of medicinal plants as well as more recent developments such as farming of temperate cash crops, commercial forestry, tourism and hydro electric power development.

11.3 Distribution of Wild life:

The distribution of wild life has been described in details in the beginning under **chapter IIB “Fauna” Part I of the Plan.**

11.4 Special objects of Management:

- i. To protect the diversity of wildlife in the division by appropriate habitat improvement operations.
- ii. Ecological security of the tract by conserving wildlife outside the protected area.
- iii. Community support for wildlife conservation.
- iv. The reduction in the dependence of local communities on the important habitat to avoid human wildlife conflict.
- v. To Orient and sensitize the Territorial front line staff towards the wild life conservation, protection, monitoring & management.
- vi. To educate staff and public in the management of wild life.
- vii. To protect and improved upon existing population of endangered species of wild life both faunal and floral found in the tract.

11.5 Management imperatives:

11.5.1 Ecological Security: For long term ecological security of the tract, the development agenda must recognize the imperative of identifying and protecting natural ecosystems from over exploitation, contamination and degradation. Short term economic gains must not be permitted to undermine ecological security.

11.5.2 People’s Support: Local communities are traditionally dependent on natural biomass and they must, therefore, have the first lien on such resources. Such benefits must be subject to assumption of a basic responsibility to protect and conserve these resources by suitably modifying unsustainable activities. Conservation programmers must attempt to reconcile livelihood security with wildlife protection.

11.5.3 Human Wild Life Conflict: The Anni Forest Division faces the problem of mainly three types of wild Animal’s depredation such as Black bear, Leopard and Monkey. Such incidents are consistently increasing and pose a great threat and challenges in wild life management.

- i) **Asiatic Black bear (*Ursus thibetanus*)-** Human conflicts is not a local, small phenomenon; but an issue that spans a diverse array of geographic and human demographic contexts. The increase in number of black bear-human conflict cases is due to competition for resources at different levels. Bear population usually require large areas of land to survive. They typically compete directly with people for resources such as space, food,. Security and cover. Almost all bear species kill or injure livestock, damage agricultural or horticultural crops, or otherwise directly compete with people.

Black bear is a forested Animal found in areas with dense canopy cover with limited human disturbance, Black bear is typically nocturnal, although occasionally it is active during day time. In Eastern Himalayans, black bear tend to be active year- round; but in North-Western Himalayas it under goes hibernation during winter. It spends this period of hibernation in dens, such as hollow tree, caves and holes dug into the ground. Black bears in North-Western Himalayas may remain in their dens for 3 to 5 months. They breed during the summer months, usually in late June or early July and cubs are born between late December and early February, While the female is still dinning. Black bears are omnivorous in the

food habits, foraging largely on fruits and to some extent on leaf material, grasses, insects and other Animal matter. The movement and ranging of the black bear is largely dependent on the quality, quantity and distribution of food which in turn is influenced by topography and climate. In the tract of this division especially dense canopy forest over area, when there is shortage of fruits in certain periods of time they become bolder and travel more widely in search of food towards crop lands so human encounters with more frequent during this period.

ii) **Leopard (*Panthera pardus*): -**

Leopard is the most widely distributed large cat in India but due to expansions of human influence and ever increasing pressure on natural resources has greatly intensified the issue of human leopard conflict in a wide variety of situations. Human leopard conflict is a complex issue influenced by political and social attitudes, the biology of the species, and management action. Effective management of conflict will have to strike a balance between minimizing serious conflict (attacks on people) and the long term conservation of the leopard species. Although the leopard is common and more resilient than other large cat species that occur in India, it is poached in the largest numbers to meet the demand of the illegal wildlife trade. The leopard is very adaptable, and can live close to human habitations. The presence of a species like the leopard in a human dominated landscape will invariably lead to some predation on domestic Animals. Carnivore density is known to be dependent on prey density and the leopard is no exception.

iii) **Monkey (*Rhesus macaque*): -**

Monkey is the most widely distributed Animal in the tract dealt with. The population has increased in human habitation than in the forests. The main cause of increased population near human habitation is availability of waste from kitchen and unsystematic disposal of kitchen waste to dust bins placed near habitation. In the beginning monkey is shy Animal but with the passage of time it become aggressive. Similar incidence of monkey human conflict has gained the attention of conservationists at large. The population has increased manifold in the division and there are a lot of complaints of crop depredation by them. All along the National highway, State Highways and even in the link roads and paths, the monkeys can be seen in herds and pose a threat to tourists, passersby and local inhabitants. The monkey also destroys the young seedlings of Chil Plants as they suck the roots of the seedlings and in this process they uproot the Chil seedling. They have left the interiors of the forests and are seen near villages and town. Some tourists also feed them generously with bread, chanas, bananas, food etc. Now the problem of conflict has increased as the monkeys have become habitual of staying in habitations on rooftops and tress near the building. However, the efforts of Forest Department are in progress to reduce number by way of sterilizing male /females of the spp.

11.5.4 Long Term management of human- leopard Conflict: The best form of conflict management is to deal with it before the problem gets out of hand. There are many areas in Himachal Pradesh where leopard live in croplands outside Protected Areas. The leopard population in croplands can be managed without serious conflict as long as the biology of the species is considered.

11.5.5 Leopard / Black Bear-Human conflicts in Anni Forest Division: As like many other parts of India, the human population in the state of Himachal Pradesh has also increased over the last 20 years. As a result of growing human population, changing land use practices and resultant anthropogenic pressures, forest cover has either decreased or declined in quality due to habitat degradation. Anni Forest Division being a valley has an interspersed of orchards, croplands with human habitations and Forest. The movement of bears and leopards for food outside these forest

areas in search of cultivated crops leads to close encounter between men and bear and sometimes to conflicts. The black bear/leopard-human conflicts are in the form of crop damage, livestock predation, human attacks and sometimes even death of humans. All these have led to strong backlash from people resulting in confrontation with the Forest Department or the Government authorities, and sometimes retaliatory killing of strayed bears. The Anni area and its surrounding forested and agricultural/horticultural landscape has black bear in relatively high densities resulting in increasing bear human conflicts and also providing ample opportunities for ecological research on different aspects of ecology and bear human conflicts.

11.6 Conflict types & Remedial Measures:

a) Damage to Agricultural Crops and Orchards: The croplands and orchards are unintentionally providing high quality food for bears. Black bears have excellent memory that helps it to locate seasonally available cultivated crops around its habitats. Individuals that have once tasted good quality and high energy food come out regularly to raid the crops and orchards near their natural habitats. As bears become habitual to cultivated crops, growing such kinds of crops actually lead to human-bear conflicts in the immediate area and the broader community.

b) Livestock Killing: Killing of livestock (sheep, goat and cow) by black bears is not uncommon and may become a serious problem. Black bear do occasionally kill livestock when there is no food available in wild for their protein requirements. There are instances when grazing domestic Annimals were predated by bear in their habitats and some cases of livestock killing in night shelters. During late autumn and early winter when food availability in bear habitats is low and due to late snowfall some bears go in for late hibernation and during such period kill livestock.

c) Human attacks and killing by Black Bear: Increased human population in and around forested areas, encroachment on forest land and increased dependence on forests by humans have led to increased frequency of bear human encounters, Black bear compete directly with people for resources such as space, food, security and cover.

11.7 Management Initiatives required address Human wild Life Conflicts:

11.7.1 Database Development and Maintenance: The basic step towards understanding and developing mitigation strategies for reducing black bear human conflicts in this Division and elsewhere in the State would be to development and maintain a database. The patterns of black bear human conflicts in a large landscape both in spatial and temporal scales will be extremely important to understand underlying causes and preventing conflicts. It is extremely important for the Forest Department of Himachal Pradesh to develop and maintain a database on conflicts for its different regions using GIS. It would be necessary to distinguish causes and symptoms of bear-human conflicts. Changing land use patterns, development and use of black bear habitats by humans are the causes, while un-natural behavior, human habituation are the symptoms.

11.7.2 Creation of conflict Management Team: A fully equipped, well trained and motivated 'Conflict Management Team' comprising of wildlife staff, veterinarians, staff of related line departments or institutions, and wildlife NGOs has to be formed at the Division/Circle level to respond to conflict situations, including Annimal rescue, treatment (if required), translocation and monitoring. Efficient and effective response to complaints is more feasible when rapid communication is possible from and to the conflict site and between the personnel of the Conflict Management Team and when duties are shared amongst the members of the team.

11.7.3 Awareness Creation: Knowledge on black bear/leopard behavior is essential for the villagers who live near bear/leopard habitats and suffer crop losses and are also vulnerable to bear attacks. Awareness creation through elected bodies at the village or block levels, religious or

educational establishments, and other government or non governmental agencies needs to be explored. Simple precautionary measures such as avoiding moving singly during dawn and dusk in crop fields or orchards or forests during summer and autumn could greatly reduce bear attacks on humans. Another crucial factor that can reduce bear attacks is providing a safe passage or escape route for a stranded bear, particularly in the villages. These ‘dos’ and don’ts’ should be widely circulated through posters in local languages. T.V. and print media should also used for awareness creation for villagers in conflict area.

11.7.4 Reducing livestock depredation by Black Bear/Leopard: As most of the livestock killings have taken place at the night shelters in the villages, it would be necessary to strengthen the doors windows and other vulnerable portions of these night shelters to reduce loss by predation to black bear and common leopard. Supervised livestock grazing by at least 3-4 villagers will reduce livestock depredation by black bear and leopards. Villagers should be advised to use iron doors and proper lighting at their cattle sheds or night shelters as both have been found to be very effective in reducing livestock loss.

11.7.5 Guarding of Crop /Orchards from Black bear damage: A village level cooperative effort for guarding of crop field orchards on rotational basis could be tried as an option using the effective means of scaring bears such as noise by drumming empty tin/metal container. Using guard dogs while patrolling and keeping them in village would be of added advantage. Proper lighting in the corners or boundaries of crop fields and orchards particularly the vulnerable points lying close to forest fringes may be another option that may help to reduce to crop depredation as observed in a few cases during the survey.

11.7.6 Changing Agricultural and Annimal Husbandry Practices: Change in local cropping patterns can significantly influence Annimal Human conflict intensity. Similarly, changing Annimal husbandry practices by keeping a few high yielding breeds and stall feeding Animals in proper shelters instead of large number of local breeds that are less productive in terms of meat and meal, could be an alternative that can reduce conflicts.

11.7.7 Monitoring of Conflict Areas: Use of passive and preventive action is an important step in conflict management. There should be proper monitoring of black bear human conflict areas where at least of the employees is present at the problem site until the situation is resolved. While monitoring the near, information such as number, age, location, bear behavior and reported. Movement of the people should be restricted to give safe passage to the rogue bear.

11.7.8 Translocation and Marking of Problem Annimals: The problem Annimals that are captured and translocated from the conflict areas should be marked by radio collar, florescent collar or by ear tags prior to release in the wild so that the movement and the ranging patterns of these Annimals could be studied. This will be very helpful in better understanding of problem bears and ultimately help in mitigating the problem

11.7.9 Aversive Conditioning of Problem Annimals: Aversive conditioning of problem Annimals (habituated to people or raiding crops) is very much essential so that the problem Annimals learns to associate ‘undesirable activities’ such as entering a village, crop field or orchard with negative events. Such problem Annimal could be subjected to one or more of the following treatments prior to release back into the wild. The treatments include: being hit with pepper sprays or rubber bullets, loud noise by bursting of cracker, and barking and or chased by specially trained dogs.

11.7.10 strengthening of Local Traditional Black Bear deterrent Methods: The traditional methods of burning red chilies mixed in cow dung can also be experimented for orchards in villages which are located in the periphery of forested areas in Apple/Cherry/Maize production

season. This traditional method was found to be effective in preventing bears from entering fields and therefore recommended for the use by local villagers in Bear conflict areas in North and Central Kashmir.

11.8 Compensation for damages caused by Wild Animals: The loss of cattle and human being due to attack by wild Animals are compensated by the forest department to victims vide notification **No. FFE-B-A (10)-1/2009 Dated the Shimla 18-08-2018** regarding relief due to losses caused to human beings and domestic live stock by the wild Animals as defined in Wildlife (protection) Act, 1972 the Governor, Himachal Pradesh is pleased to notify the following enhanced relief rates is tabulated in table No. 10.1 & the compensation paid to the victim is also given and tabulated in table No. 10.2

Table No. 10.1

S.No	Particulars	Enhanced Rates (in Rupees)
1.	In case of death of human being.	4,00,000/-
2.	In case of permanent disability to human being.	2,00,000/-
3.	In case of grievous injuries/ partial disability to human being.	75,000/-
4.	In case of simple injury to human being as per actual cost of medical treatment subject to maximum.	15,000/-
5.	In case of loss of Horse ,Mule, Buffalo, Ox, Yak and Camel	30,000/-
6.	In case of loss of Cow Jersey and cross breed.	15,000/-
7.	In case of loss of Cow (local ;bred), Donkey, Churu, churi & Pashimna Goat.	6,000/-
8.	In case of loss Sheep, Goat and pig.	3,000/-
9.	In case of loss of young ones f Buffalo, Cow Jersey and all other breeds, Mule ,yolk, Horse, Camel , Churu, churi, Donkey . Pashimna Goat, Sheep and Goat.	15,00/-

Table No. 10.2

The compensation granted to people of the locality for damages is given below:-

Name of Range	Year	No of case Sanctioned	Domestic Annimal (Nos.)	Human being (Nos.)	Compensation (in Rupees)		Total Amount paid in (Rs.)
					Domestic	Human being	
Arsu	2009-10	7	0	7	0	35000	35000
Chowai		7	2	5	3000	25000	28000
Nither		5	4	2	4000	10000	14000
Total		19	6	14	7000	70000	77000
Arsu	2010-11	5	5	1	4363	5000	9363
Chowai		3	0	3	0	15000	15000
Nither		6	9	0	6750	0	6750
Total		14	14	4	11113	20000	31113
Arsu	2011-12	9	6	3	8475	15000	23475
Chowai		12	8	5	14800	81000	95800
Nither		11	7	5	10300	25000	35300
Total		32	21	13	33575	121000	154575
Arsu	2012-	8	14	1	12175	5000	17175

Chowai	13	8	8	4	8500	76000	84500
Nither		10	8	2	12750	38000	50750
Total		26	30	7	33425	119000	152425
Arsu	2013-14	10	6	6	12700	114000	126700
Chowai		8	3	5	6500	109000	115500
Nither		7	1	6	1500	86000	87500
Total		25	10	17	20700	309000	329700
Arsu	2014-15	12	16	3	51500	157246	208746
Chowai		8	13	5	24000	308186	332186
Nither		9	5	4	27000	93088	120088
Total		29	34	12	102500	558520	661020
Arsu	2015-16	10	11	3	34000	5625	39625
Chowai		13	31	3	86500	300000	386500
Nither		10	9	2	61500	6739	68239
Total		33	51	8	182000	312364	494364
Arsu	2016-17	4	3	1	18000	283	18283
Chowai		9	25	4	54000	301356	355356
Nither		2	1	1	6000	75000	81000
Total		15	29	6	78000	376639	454639
Arsu	2017-18	2	2	0	7500	0	7500
Chowai		7	16	1	42000	3443	45443
Nither		4	5	0	42000	0	42000
Total		13	23	1	91500	3443	94943
Arsu	2018-19	8	9	0	63000	0	63000
Chowai		11	21	2	129500	150000	279500
Nither		8	6	2	91500	78460	169960
Total		27	36	4	284000	228460	512460
Arsu	2019-20	13	26	2	175500	150000	325500
Chowai		4	4	1	75000	1283	76283
Nither		3	4	0	36000	0	36000
Total		20	34	3	286500	151283	437783
G.Total		253	288	89	1130313	2269709	3400022

(Source: - Record of DFO, Anni).

11.9. Management Prescriptions:

11.9.1 Habitat Management:-Reversing the process of degradation of forests as prescribed by itself improve the habitat of wild life. Cost effective check dams and water bodies prescribed in will be constructed in location with access to wildlife or in known wildlife habitats. The water bodies so constructed will be, to the extent possible, under vegetation cover. Rather, the vegetation cover over the natural water bodies in the wilderness will be left undisturbed, as the water holes without vegetation cover do not attract wild life. Dead and dying trees will be retained as snags for smaller species of mammals and birds. In Known wildlife habitats, the biotic interference in the form of collection of forest produce will also be discouraged. The availability of food, water and shelter for wildlife has to be improved. Fire protection is one of the best accelerating steps towards better habitat. Augmenting the fodder resources of herbivores through artificial regeneration of fodder species such as grass, herbs bamboos and trees help in

multiplication of prey species, which in turn, support predators and scavengers. As per the policy of the State Govt. out of the total plantations to be done in an area, at least 10% plants are to be of fruit bearing species. The species to be planted in a particular area has to be as per the policy of the State Govt. that out of the total plantation to be done in an area, at least 10% plants are to be of fruit bearing species, the species to be planted in a particular area is to be as per the requirement of the wild life species specifically found in that area. Protection of micro wild life habitats from forest fire especially during breeding season, and effective patrolling against poaching are required during the month of October-November and April –May by development of daily wage anti poachers in sensitive forest areas adjoining to Protected area network of this Division.

11.9.2 Veterinary care: Veterinary care in area rich in wild life may be insured by:-

1. Wild life health monitoring through Post mortem examination and direct and indirect observations.
2. Free vaccination and preventive measures like de-worming to grazing domestic livestock and special veterinary care campaign for foot and mouth diseases in nomadic live stock
3. Extension education to owners of domestic livestock.

11.9.3 Training: For carrying out multidimensional activities, ranging from routine protection to social services, a new breed of staff with entirely different perceptions has to be made available. The available talent can be sharpened only through training. On the job training will be given to staff for capacity building. Training in weaponry, unarmed combat, participatory exercises, first aid, veterinary care, intelligence gathering, investigation, public relations, wildlife sciences etc. will be provided in various reputed institutions. Apart from that staff should be well versed in investigation, adducing evidence and material, dealing with wild life offences/offenders, compoundable and non compoundable cases under the Wild Life (Protection) Act, 1972. Staff should be imparted training in matters like trapping of wild Animals, rescue operation, collection of samples of vital organs for pathological, viral and bacterial examination, their preservation and dispatch, sign and symptoms of common wild life diseases, external indicators of health etc.

11.9.4 Research and monitoring: Sudden outbreak of disease, suitability of a given area for a particular species, carrying capacity of forest crop, raids and methods to check the excessive breeding of a particular species are some of the problems that need research inputs. These problems can be addressed by appointing qualified persons for research and monitoring or by entrusting the same to specialized research organization like HFRI, WII and local universities. It is essential to monitor the growth and development of wildlife in a given area to assess the impact of management practices, so as to make the needed corrections to suit the objective.

11.9.5 Awareness programme and peoples participation: Educating the local population about the importance of wildlife in the ecosystem and creating awareness about their conservation will go a long way in protecting our forests as well as reducing human-Animal conflicts. Such awareness can be brought through nature camps to different target groups such as students, forest dwellers, and orchard owners etc. coupled with seminars, workshops and guest lectures.

11.9.6 Mitigating Man Animal Conflicts: Some of the recommendation to mitigate the conflict at the man-Animal inters face are:-

- i) Augment sources of browse species particularly grass and bamboos.
- ii) Encouraging stall feeding among fringe dwellers may reduce the number of livestock within forests.
- iii) Timely action for compensating the loss due to crop raiding.
- iv) Ensure sufficient budgetary support to provide relief to victims. Wild life compensation has been made part of Public Guarantee Act in Himachal Pradesh.

- v) Explore and promote alternate income generating source for forest dependent population.
- vi) Explore LPG connection on subsidized rates for forest dependent population so that dependence on forest and pressure for fuel wood could be reduced.

11.9.7 Census of Wild Life: The Monkey census is half yearly feature now. Proper documentation of the population trends i.e. pre-sterilization and post sterilization of monkeys are needed for management. This will help in studying the impact of sterilization and making decision for further improvements in future. The monkey census was carried out during February 2012 in this Division and the census of Monkey is given in the table as below:-

Year 2009-2010			
Name of Range	Name of Beat	No. of troops	No.s of Monkeys
Chowai	Deem	5	106
	Kohila	4	133
	Luhai	1	62
	Kot	3	41
	Tarala	3	107
	Kuiner	2	62
	Karshala	2	107
	Tharvi	1	34
	Gad	4	170
	Kutwa	3	160
	Poeg	2	75
	Karana	2	117
	Bai	0	0
	Patarna	0	0
	Namhong	5	185
	Hari pur	6	233
	Chowai	2	78
	Total	45	1674
Neether	Dalash	3	275
	Luhri	4	162
	Tandi	3	134
	Kandagai	2	59
	Ghattu	4	50
	Margi	5	143
	Katmore	0	0
	Nore	3	117
	Ghorla	2	87
	Moin	3	132
	Nither	3	132
	Sarahar	5	131
	Koil	8	297
	Total	45	1719
Arsu	Arsu	4	110
	Pali	3	63
	Buini	1	22
	Tharvi	2	29
	Nirmand	6	210

	Averi	4	91
	Brow	6	56
	Pujarli	4	66
	Sarahan	3	89
	Juagi	5	77
	Tharla	5	121
	ShamAnni	4	59
	Kharga	3	71
	Sarga	4	116
	Tunan	4	136
	Kindla	6	261
	Total	64	1577
Year 2012			
Name of Range	Name of Beat	No. of troops	No.s of Monkeys
Chowai	Deem	5	112
	Kohila	3	86
	Luhai	3	80
	Kot	3	132
	Tarala	3	105
	Kuiner	2	21
	Karshala	4	97
	Tharvi	2	21
	Gad	4	145
	Kutwa	4	176
	Poeg	3	91
	Karana	3	85
	Bai	2	42
	Patarna	2	70
	Namhong	3	73
	Hari pur	4	116
	Chowai	5	162
	Total	55	1614
Neether	Dalash	2	53
	Luhri	4	66
	Tandi	2	38
	Kandagai	1	35
	Ghattu	3	52
	Margi	3	39
	Katmore	1	16
	Nore	3	105
	Ghorla	3	9
	Moin	3	182
	Nither	2	59
	Sarahar	3	48
	Koil	2	43
	Total	32	745
Arsu	Arsu	1	16
	Pali	2	71
	Buini	1	24
	Tharvi	0	0

	Nirmand	4	102
	Averi	3	46
	Brow	3	31
	Pujarli	4	43
	Sarahan	0	0
	Juagi	3	33
	Tharla	6	58
	ShamAnni	3	26
	Kharga	3	43
	Sarga	3	53
	Tunan	3	45
	Kindla	2	49
	Total	41	640
Year 6/2013			
Name of Range	Name of Beat	No. of troops	No.s of Monkeys
Chowai	Deem	3	71
	Kohila	2	59
	Luhai	2	63
	Kot	2	89
	Tarala	2	77
	Kuiner	1	33
	Karshala	1	29
	Tharvi	1	37
	Gad	2	46
	Kutwa	2	68
	Poeg	2	96
	Karana	2	91
	Bai	2	55
	Patarna	2	86
	Namhong	2	40
	Hari pur	2	77
	Chowai	3	125
	Total	33	1142
Neether	Dalash	2	69
	Luhri	2	65
	Tandi	2	56
	Kandagai	1	33
	Ghattu	1	43
	Margi	3	58
	Katmore	2	45
	Nore	1	30
	Ghorla	1	52
	Moin	1	54
	Nither	1	37
	Sarahar	1	40
	Koil	3	131
	Total	21	713
Arsu	Arsu	2	27
	Pali	2	21
	Buini	1	21

	Tharvi	2	58
	Nirmand	4	66
	Averi	4	56
	Brow	5	150
	Pujarli	1	56
	Sarahan	1	20
	Juagi	1	19
	Tharla	1	24
	ShamAnni	1	17
	Kharga	4	115
	Sarga	4	92
	Tunan	3	39
	Kindla	1	54
	Total	40	935
Year 6& 7/2015			
Name of Range	Name of Beat	No. of troops	No.s of Monkeys
Chowai	Deem	3	55
	Kohila	2	46
	Luhai	2	52
	Kot	3	149
	Tarala	2	81
	Kuiner	2	53
	Karshala	2	182
	Tharvi	2	65
	Gad	2	92
	Kutwa	2	81
	Poeg	2	67
	Karana	2	96
	Bai	3	54
	Patarna	3	41
	Namhong	2	35
	Hari pur	3	94
	Chowai	3	57
	Total	40	1300
Neether	Dalash	4	117
	Luhri	4	125
	Tandi	3	39
	Kandagai	2	42
	Ghattu	2	66
	Margi	1	28
	Katmore	2	61
	Nore	2	43
	Ghorla	2	48
	Moin	2	45
	Nither	3	82
	Sarahar	2	15
	Koil	2	80
	Total	31	791
Arsu	Arsu	3	84

	Pali	3	107
	Buini	1	42
	Tharvi	2	60
	Nirmand	2	34
	Averi	4	105
	Brow	2	106
	Pujarli	2	75
	Sarahan	3	68
	Juagi	3	81
	Tharla	2	42
	ShamAnni	2	50
	Kharga	3	99
	Sarga	2	40
	Tunan	4	99
	Kindla	3	144
	Total	41	1236

Langoor:-

Year 6/2013			
Name of Range	Name of Beat	No. of troops	No.s of Langoors
Chowai	Kot	1	22

(Source:- Record of Anni Forest Division at Luhri)

Similarly leopard census need to be made a regular feature and in the present day technologies the camera trap methodologies is to be adopted in place of traditional 'Pug Mark Method'. This will help in mitigating man Animal conflicts in future. Therefore DFO (T) should take necessary step with the Govt. for camera trap and conduct a proper survey to identify such key location for trapping and plan the forestry operation in such a way so as to cause least disturbance to wild life and may minimize the man-wild life conflict.

11.10 Compensation for damages by Monkey:

During last four years the following incidence of monkey damages outside the protected area has been noticed and compensation paid accordingly. The year wise Range wise number of monkey damage incidence in Anni Division is tabulated in the table:-

Detail of compensation paid to victims against monkey depredation

Year	Name of Range	No. of incidence	Compensation
2000-01	Chowai	0	0
	Neether	0	0
	Arsu	2	3750
2001-02	Chowai	0	0
	Neether	0	0
	Arsu	0	0
2002-03	Chowai	1	1875
	Neether	0	0
	Arsu	0	0
2003-04	Chowai	0	0

	Neether	0	0
	Arsu	0	0
2004-05	Chowai	0	0
	Neether	0	0
	Arsu	0	0
2005-06	Chowai	0	0
	Neether	0	0
	Arsu	0	0
2006-07	Chowai	0	0
	Neether	0	0
	Arsu	0	0
2007-08	Chowai	1	5000
	Neether	0	0
	Arsu	0	0
2008-09	Chowai	0	0
	Neether	0	0
	Arsu	0	0
2009-10	Chowai	0	0
	Neether	0	0
	Arsu	0	0
2010-11	Chowai	2	10000
	Neether	0	0
	Arsu	0	0
2011-12	Chowai	1	5000
	Neether	0	0
	Arsu	0	0
2012-13	Chowai	0	0
	Neether	1	5000
	Arsu	0	0
2013-14	Chowai	0	0
	Neether	2	10000
	Arsu	3	71000
2014-15	Chowai	0	0
	Neether	0	0
	Arsu	0	0

(Source:- Record of Anni Forest Division at Luhri)

11.11 Monkey-human interface:

The monkeys have become a problematic animal for last 10 to 15 years in Himachal. Whether it is the townships or the rural areas, monkey menace is quite common. Not many efforts were made to address this problem in the past as this problem was never considered a major problem. The efforts made for last 6-7 years at Forest Department level are too meager, they have no visible impact as such.

During the course of Monkey incidence estimation a two step strategy was adopted in this division which included:

- i) Preliminary observations for Monkey estimation to determine the hot spots.
- ii) Comprehensive monkey estimation in the hot spots.

During this process the following beats of this division has been identified for having high concentration of monkey population and is tabulated in the table:-

Name of Range	Name of Block	Name of Beat
Chowai	Chowai	Haripur
	Paneo	Poeg
		Karana
	Khanag	Kohila
		Kot at Khanag
	Takrasi	Kuiner
Neether	Dalash	Luhri
		Dalash
	Neether	Ghorla
		Neether
		Moin
		Koil
	Margi	Ghatu
		Nore
Arsu	Nirmand	Nirmand
		Averi
		Brow
	Arsu	Pali
		Arsu
	Kharga	Tunan
		Kindla
	Sarahan	ShamAnni

(Source:- Record of Anni Forest Division at Luhri)

11.12 Strategy to Mitigate Monkey Menace:

11.12. The monkey sterilization programme: Before understanding the mitigation of the monkey problem we need to understand the root causes of the monkey population increase and the abrupt behavior of the monkeys.

11.12.1 Brief Regarding Policy of State Govt.: HP Cabinet has taken several decisions on its meeting dated 18.10.2011 to launch a special drive to address monkey menace across the whole state. A target of sterilization of 2 lakhs has been fixed and was to be achieved by June 2012.

Among other decisions, it has also been decided that rates for monkey capturing shall be Rs. 500 per monkey and even Forest Guards who capture the monkeys shall be entitled to be paid Rs 500 per monkey captured.

In view of the above decision, DFOs(T) being the notified wildlife Wardens are directed to start the capturing of monkeys in their divisions and necessary direction were issued to the field staff particularly the Beat Guards to immediately start capturing the monkeys in their beats by involving local people or professional monkey catchers. Local monkey capturing teams can be constituted for this purpose. Initially 200 beats have been

identified by Wild Life Wing which is having high monkey population concentration but monkey capturing has to be done in all the beats wherever the monkeys are present.

All the captured monkeys have to be sent to the nearest Monkey Sterilization Centers through the nearest concerned DFO (Wildlife). There are Eight fully operational Monkey Sterilization Center namely Tutikandi (Shimla), Sastar (Hamirpur), Gopalpur (Kangra), Salapar (Mandi), Paonta Sahib (Sirmaur), Salol (Chamba), Ispur & Boul (Both in Una) in Himachal Pradesh. After the monkeys are sterilized, they shall be handed back by the concerned Wildlife Staff to the concerned Forest Guard for release on the same spot from where these monkeys were captured.

All DFOs (T) shall submit their requirement of funds for monkey capturing operations to CCF (FD & PAN) –cum– CEO, HP Zoos Conservation Breeding Society immediately.

You are therefore, directed to immediately go ahead with the monkey capturing operations in your respective jurisdiction.

11.13 Causes of increase in Monkey Population:

i) Change in land use pattern:

- a) Shift from traditional cropping pattern.
- b) Off season cropping and high nutritional value cropping

ii) Shift from wild to co-mensal:

- a. Due to increase in the human population even wild monkeys are now used to human habitations.
- b. Monkeys are used to the human beings as well.
- c. No struggle for food increases the life span (Average lifespan in the wild is 7 to 10 years when they have to compete for food in the wild, where as when easy food is available in the form of garbage. Manual feeding in the township, they can live up to 10-15 years) .
- d. Non availability of food base in the wild (WL Habitats degraded both qualitatively as well as quantitatively)

iii) No garbage management in townships:

- a. Easy food availability leads to multiplicity.
- b. Increases the life span.

iv) Bifurcation of the groups due to the Fragmentation of Habitat or other reasons.

- a. The bifurcated group tends to regain the minimum same size (Group behavior)
- b. Abnormal behavior when they get separated from the group.

v) Manual feeding:-

- a. Due to religious reasons
- b. Increased tourism and increased number of the temples.
- c. Disposal of the waste food.

vi) No predators of the Monkeys in the wild.

Monkey is not the preferred food of leopard. Earlier large Eagle/Vulture used to pick up the infants of monkeys but now predator's population has gone down drastically.

11.14 Some of the facts about Monkeys:

- 1) Mating is not confined to a specific season. Females are mature by three years of age, and males at four years of age.
- 2) Female cycle similar to humans with menstrual cycles of around 28 days.
- 3) The monkey average gestation period is six months (From 135 – 194 days) and most of the females in the group give birth to one baby in a year.
- 4) Male are the dominate sex, but they do not remain with troops permanently, so female monkeys lead these communities.
- 5) Because troops include multiple mature males and females, their members are sexually promiscuous.
- 6) Females usually produce one young each year, which will be raised by its mother with in the very social environment of the troop.
- 7) The life span in the semi urban and urban areas can carry between 10-15 years where as in the wild 3 to 7 years. These typical lifespan of rhesus monkey in captivity is approximately 15 to 12 year for males and 20-25 year for females.
- 8) The monkeys also exhibit typical “group living” behaviour like maintaining minimum population of the group (Group size)
- 9) In HP the population estimate of the monkeys is more than 3 lacs in which about 65 thousands are estimated in the townships and rest in the rural/forest areas.
- 10) In Anni Forest Division itself a survey was conducted on the hotspots only and the estimation of monkeys population comes to be more than 3327.

11.15 Mitigation Measures:

Some of the recommendations for mitigation measures are as under:-

- i) If less than 70% Animals of a particular group are not sterilized within 6 months (period of gestation), the impact of the sterilization will minimal.
- ii) Right from capturing the monkey sterilization to release back at the same area the group identity has to be maintained and not be mixed with the other group of monkey.
- iii) Though the females should be preferred for the sterilization but for the practical purpose both the sexes are to be sterilized to have maximum impact.
- iv) The post operative behavior of the monkeys needs to be studied especially after release.
- v) The success of the sterilization programme depends upon the percentage of the catches in a group in the first go.
- vi) The monkey confined to the township need a different treatment than the rural/forested areas.
- vii) The monkeys of the rural areas can be pushed back to the forest by making them scare and by increasing the natural food base in the wild.
- viii) The group of the rural areas which are habitual and feed on the agricultural crop only may need to be scientifically culled. (The sterilization will not have conservable impact as it is very difficult to capture more than 70% of the group at a time in rural areas as the monkeys being semi co-mensal)
- ix) In the first go we should confine to the township for the sterilization and release back.
- x) Modern technologies like drop nets need to be used for capturing the monkeys and to increase the catches.
- xi) Need training of the front line staff for monkey capturing.
- xii) Focus should be the GROUP rather than number from different groups
- xiii) Stop manual feeding (Donations be put in containers).

- xiv) The food accumulated in the container be medicated with the contraceptive medicines and then monkeys be fed at some common place.
- xv) Creating a mass awareness about garbage disposal, no manual feeding, now to avoid monkeys attacks and care etc.
- xvi) Exploring the options for export and translocation to the North Eastern States.

11.16 Conservation options:

- i) Create awareness amongst the students of schools and colleges in and around Anni Forest Division about the importance of wild life conservation with particular emphasis on endemic species of wild fauna.
- ii) Select/make a group of students by forming nature clubs. These students will then be trained making use of resource person in the respective fields.
- iii) There is a scheme for payment of cash rewards for providing intelligence about persons indulging in poaching and illegal trade in wild life product in the state. It was framed in February 1994. The information for which cash rewards would be made available should fall under either of the two categories.
 - a) Illegal held stocks of wild Animals and wild life products.
 - b) Any activity related to poaching illegal trade or transport, illegal export or import committed or to be committed.

CHAPTER –XI+1

GENERAL FINANCIAL FORECAST AND FINANCIAL PLAN OF OPERATION

XI+1.1 Future Revenue and Expenditure:

Due to all round development of the region, rise in the living standards of the people and improvement in the means of communication, the prices of the forest commodities have registered a steep rise during the past years. This trend is likely to continue in the future also. There is a complete moratorium on the green felling in the state since 1980 and there is likelihood of continuance of this moratorium in the near future also. Therefore, the usual fluctuations make it very difficult to prepare a financial forecast that is likely to be accurate for the whole period of the plan. Similarly, it is equally difficult to correctly assess the expenditure likely to be incurred in carrying out the prescription of this working plan. An attempt has therefore been made to estimate the future surplus based on the current price of forest produce and the present cost of carrying out various operations prescribed in the Working Plan. However, an estimate of revenue and expenditure, based on present market rates has been made in the working plan.

XI+1.2 Past Revenue and Expenditure:

The details regarding past revenue and expenditure under various schemes incurred during Negi's plan are given in the Paragraph 7.10 under Chapter No - VII table No.-7.25 of Part I of this plan.

XI+1.3 Future Yields:

The total annual yield (in M³) expected from all the Working Circles are tabulated and given in the table No.- XI+1.1

Table No.- XI+1.1

Statement showing the annual prescribed yield.

Name of WC	Deodar	Kail	Chil	Fir	Spruce	Total
DKWC	13972	3963	191	1769	5002	24897
FSWC	478	566	0	2883	5732	9659
CWC	10	0	1662	0	0	1662
PWC	0	0	0	0	0	0
Total	14460	4529	1853	4652	10734	36228

The yield from salvage markings has not been taken into account.

XI+1.4 Expected Revenue

The expected annual revenue based upon the current royalty rates fixed for conifers in Rampur Circle for the year 2019-20 works out is tabulated in the table No. XI+1.2

Table XI+1.2

Future Revenue

a) Sale of Timber trees			
Species	Volume (in M³)	Rate per cubic meter (in Rs.)	Amount (in lacs)
Deodar	9719	7583	736.99
Kail	3750	4106	153.98
Chil	3785	809	30.62
Fir	8410	1370	115.22
Spruce	1795	1370	24.59
Total	27459		1061.40
b) Resin			
	Number	Rate per blaze	Amount (in lacs)
	40546	42	17.03
c) Miscellaneous Revenue			
			41.92
G. Total			1120.35

To assess the revenue for subsequent years, 10% increase be given annually.

XI+1.5 Future Expenditure:

The future estimated annual expenditure is calculated on the basis of expenditure incurred for the year 2019-20 and tabulated in the table No. XI+1.3

Table XI+1.3
Future Expenditure

Sr. No.	Particulars	Estimated Expenditure (in Lacs)
	A. Establishment Cost	
1	Salary of staff	516.509
2	Travelling Expenses	4.35
3	Office Expenses	4.50
4	Medical Expenses	3.00
5	Wages of contingent staff	2.00
6	30-Motor Vehicle	2.00
7	20-Other Charges	2.50
	Sub Total	534.859
	B. Conservancy and Development	
1	Regeneration of forests	0.00
2	101 (03) Forest protection	1.50

3	Timber & other produce removed by Govt. Agency	0.30
4	Timber & other produce removed by consumer and purchasers	0.20
5	Consolidation & demarcation	0.00
6	2402 -Soil Plan	38.45
7	2406-Repair of Buildings, Roads and Paths	7.40
8	101 (03) C-90 Integrated Forest Protection Scheme	6.30
9	101 (04) Working Plan Organization	1.00
10	102 (01) Development of pasture and grazing land	5.11
11	102 (04) Improvement of tree cover /raising of plantation and other programmes/ related activities	17.07
12	102 (05) Raising of nursery for Departmental Planning and Public Distribution	60.20
13	102 (07) Maintenance of Plantation and Nursery	6.18
14	102 (38) Samudayik Van SamvardhanYojna	8.20
15	800 (06) New Forestry Scheme - "Sanjhi Van Yojana".	0.80
16	800 (09) Vidyarthi Van Mitra Yojana	3.47
17	800 (10) Van Samridhi-Jan Samridhi Yojana	5.79
	102 (41) Ek Buta Beti Ke Naam	7.59
18	110-Wildlife Preservation	3.19
19	4216 Capital Outlay 37- Major work(Residential Building)	34.64
20	4406 Capital Outlay Roads, Paths and Buildings	52.43
21	Demand No. 15-BSP	50.37
22	2235-Social Security and Welfare	4.72
23	Demand No. 32	9.30
	Sub Total	324.19
	Total Expenditure	859.05

Based upon the above calculations, the future annual net revenue, expenditure and surplus / deficit is tabulated Table No:- XI+1.4

Table No:- XI+1.4

Future Net Revenue (Rs. In Lakhs)	Future Net Expenditure (Rs. In Lakhs)	Surplus /Deficit (Rs. In Lakhs)
1120.35	859.05	261.3

XI+1.6 Cost of Working Plan:

Table XI+1.5

Sr. No.	Item	Amount (in lacs)
1	Cost of enumeration works, field work, Motor Vehicle and other Wages.	4.00
2	Machinery	1.00
3	Material and supply	1.00
4	Office expenses	8.00
5	Travelling Expenses	0.00
	Total	14.00
	Cost of WP for brought under management (RFs, DPFs & UPFs) Rs./per hac.	26.07

CHAPTER –XI+2

MISCELLANEOUS REGULATIONS

XI+2.1 Petty Fellings:

Felling of petty nature, as detailed below may be treated as prescriptions of this Working Plan:

- i. Where illicit felling of trees has been done to meet the bonafide domestic requirements and the offence is petty in nature.
- ii. Right holders suffering from natural calamities/fire sufferers will be granted timber for construction of house/repair from free of cost as per the actual requirements recommended by the Sub Divisional Officer (Civil) and after personal verification by the ACF/DFO concerned subject to the grant not exceeding the maximum limit prescribed under rule-4 of Himachal Pradesh (Timber Distribution to the Right Holders) Rules, 2009 and 2016.
- iii. No felling will, however, be done till the alignments of electric lines, or transmission lines, roads or water channels to be constructed have been finally approved by the Govt. of India under Section 2 of Forest (Conservation) Act, 1980.
- iv. Timber required for departmental purpose i.e. for new construction or repair of building i.e. field staff quarter, Inspection Hut or for construction of bridges or inspection path passing through forests etc. may be obtained from free of cost or departmental norms as fixed by the State Govt. from time to time.
- v. The expression 'petty offences' in relation to illicit felling shall mean the offence where the amount involved is less than rupees two lakh for determining that the offence is for bonafide domestic use, it must be established during investigation that timber has actually been used for domestic purpose only.

All the trees and poles marked for such purpose shall be recorded in the respective compartment History Files and such felling will appear in Control Forms. Silvicultural principles shall be strictly adhered to while carrying out such marking.

XI+2.2 Deviations:

Any large or unusual felling operation not prescribed in the Working Plan will constitute a deviation, and will require prior sanction of the Principle Chief Conservator of Forests. The following type of fellings will constitute the deviation:-

- (i) Large scale damage by fire and wind storms.
- (ii) Special fellings to meet the sudden unexpected heavy demand of defense purposes.
- (iii) Fellings of trees in the alignment of major road, electric transmission line and Hydro Power Projects etc. approved by the Govt. of India under Section 2 of Forest (Conservation) Act, 1980.
- (iv) No Forest working is allowed in forest area if not covered by the approved Working Plan by the Govt. of India.

XI+2.3 Demarcations and Survey:

The Reserve Forests, I & II Class Demarcated Protected Forests have been surveyed and mapped of 4"=1 mile scale but no proper boundary register has been prepared. The boundaries of each Reserve Forests, I & II Class Forests Demarcated Protected Forest have to be checked with

the help of its map and detail boundary register should be prepared and magnetic bearing should be recorded for checking of boundaries and for avoiding encroachments etc.

Since the boundaries of III Class listed UPFs has not been properly defined and delineated on the grounds which are urgently required to be so attended. The boundary pillars are not properly serially numbered and maintained creating confusion at all stages. This is a specialized job. Special task force comprising of ACF, Rangers and Deputy Rangers be constituted which will carry out complete checking and all the boundary pillars of RFs, I & II Class DPFs as well as along the boundary of included cultivations must be regularly repaired and maintained in good condition to check encroachments in the forests.

XI+2.4 Forest Settlements:

The boundaries of the Reserved and Protected Forests were marked at the time of Forest Settlement by Anderson and according to the settlement report, the boundary register was deposited with the then Divisional Forest Officer at Kullu. However this boundary registers pertaining to the Seraj Forest Division is not traceable. No boundary records were available either at the headquarters of the Divisional Forest Officer, Seraj or its Range headquarters making it difficult to check the position of the boundaries. Whatever Forests were declared as Reserved and Protected I class and IIInd class were not entered in the Revenue records as such. The 3rd class Forests were not demarcated at all during the settlement operations. In the absence of boundary register and no mention about the boundaries of the Forests in the Revenue records of the district, the only option left, for checking of the boundaries of the Forests, is with the help of 4"-1 mile survey sheets.

The settlement of Kullu Forests began in 1866 and was carried at a time when the Indian Forest Act was passed in 1878; there is no change in the legal position, Rights and concession in the Forests. As such the legal position, Rights and concessions as in last working plan are briefly described below: -

By that time some area has been demarcated and rules which had been drawn up by Mr. Duff, the then Forest Officer Kullu. Under the provision of the Forest Act, the first Notification with a view to effecting the settlement of the Forests under Chapter-II of the Act was issued in July, 1880. In 1883, orders were issued by the Punjab government that bulk of the Forests were to be treated as protected, only small and special areas being constituted as "Reserves".

Soon after the issue of these orders the work of settlement was commenced by Mr. Alexander Anderson, the Assistant Commissioner, assisted by Mr. Gisborne Smith, the local Forest Officer. The settlement report was submitted in 1886 and the proposed 'reserves' were gazetted as such in 1895 and after considerable alterations has been made in the record of Rights, and in the proposed rules for the protected Forests, the necessary notifications concerning them were issued in 1896. The final result of the settlement was to create, four classes, of Forests of which the first constituted the 'Reserves' under Chapter-II of the Forest Act while the others were placed under the provisions of Chapter-IV of the Act.

The 'Protected' Forests were divided into 'Demarcated' Forests of 1st and 2nd classes and 'Undemarcated' Forest also termed III class Forests. The general difference between Ist and 2nd classes is that in the former the Rights of user are less extensive and more clearly defined than in the latter, a difference which was made because the first class Forests were more valuable both for the people and for producing timber for export. The 2nd class Forests differ from the undemarcated Forests in having the grazing Rights in them more clearly defined and also in being intended to be preserved from being broken up for cultivation.

Though the boundaries of the 'Reserved' Demarcated Protected' Forests were defined and notified in the gazette by the Government of Punjab. Yet these Forests have not been entered as such in the Revenue record of the District. The Government of Himachal Pradesh has now decided that all the Forests notified as ' Reserved' and 'Demarcated Protected' Forests should be entered in the Revenue record as such .Its being experienced now that such entries cannot be made unless a joint settlement by revenue and Forest department is undertaken and record is prepared of such Forests after proper demarcation along with the private lands. It is relevant here to add that during Revenue Settlement in the Kullu district only the private holdings were measured and record thereof made, rest of the area comprising Government land was categorised as waste land and Grazing Land.

All forests and waste land were declared in Himachal Pradesh as Protected Forests by the Government vide notification No. Ft. 29-241/49 dated Shimla-4 the 25th February, 1952. Subsequently, the Govt. through notification No. Ft. 774-1/63 (M) dated 24-2-1964 ordered that these forests be demarcated, and surveyed and rights be determined. At present boundaries of protected forests throughout have not been defined on the ground. Similarly record of rights admitted in these forests is to be prepared and notified under Section 29(3) of the Act and also to be notified in the official gazette. Even the demarcation does not enjoy any legal status so far. The individual forests under this category have, however, got to be defined and notified under the provision of the Chapter-IV of Indian Forest Act, 1927. Thus, no Forest Settlement exists for UPFs which were declared as Protected Forest after the formation of Himachal Pradesh vide notification dated 25-2-1952. Therefore, it is suggested that a forest settlement for the entire tract, to be revised and settle the rights of users which is urgently needed and should be taken up immediately after the demarcation and survey of III Class listed UPFs i.e. other than forest land-Charagah billa Darakhatan and Charagah Drakhthan etc. to avoid any legal complication. The Hon'ble H.P High Court held that in absence of any proof with regard to the compliance of the mandatory provision of Section 29 to 32 of the Indian Forest Act, 1927, the conviction is bad under Section 33 of the Act.

The State of legal position, forest settlement, entries in revenue record, creation of new DPFs and application of IFA, 1927 and Forest (Conservation) Act, 1980 have been discussed in detail in Chapter-I, Part-I.

XI+2.5 Creation of New Protected Forests:

The existing listed III Class UPFs should be converted into DPFs as in the absence of proper notification, demarcation on ground and due to absence of boundary pillars there is a lot of confusion regarding their limits, exact extent and application of the provision of the Chapter-IV of Indian Forest Act, 1927.

In addition, with the enactment of H.P. Village Common Lands (Vesting and Utilization) Act, 1974 and H.P. Ceiling on Land Holding Act, 1972, the ownership of the land which was earlier with the villagers & big landed owners has vested in the H.P. State Government. There are a large number of plantations carried out on these lands over the period of time but these areas do not come under the purview of Indian Forest Act, 1927. Therefore, it is suggested that necessary step should be taken at the earliest and to notify these listed III Class UPFs area as Protected Forests under the Act and included in the next Working Plan.

XI+2.6 Entries in Revenue Record:

As discussed in the preceding Para that the RFs, I & II Class DPFs do not find mention in the revenue record. However, the same should be reconciled with the forest record and necessary entries in the revenue record be made. The matter should be taken up with the Revenue Department for making entries in the revenue record. This task requires immediate attention and should be completed within five years of the plan.

XI+2.7 Revisions of Forest Settlement Rights:

The Forests of Himachal Pradesh happen to be the first ones to have been taken up for colonial scientific management by the British Empire in Sutlej and Chenab Valley. The local populations were granted the rights and concessions of timber and other forest produce to meet their bonafide needs under the provision of Forest Settlement Report, prepared by Anderson. It is very strange to know that the uses of forest resources are still continue to be governed by the Forest Settlement Report by Anderson without any changes except T.D. (Timber Distribution) rights. All these rights and concession is meant for the satisfaction of personal bonafide requirements and subject to the condition that forests are to be maintained in perpetuity. Thus rights will not be exercised to an extent which will endanger the existence of the forests.

Therefore, it is suggested that Century old Settlements of rights should be revised and the rights etc. recorded precisely keeping in view the existing condition and needs of the society in order to meet the changes of such new situations to achieve sustainable management of forests.

XI+2.8 Forest Boundaries:

The state of boundaries has been dealt in detail in chapter-I, Part-I. The boundary pillars of RFs, I & II Class Demarcated Protected Forests have been erected during the Forest Settlement and after that no revision of Forest Settlement has been done. However, the Forest Settlement Report which was prepared by Anderson, was also not notified. Resultantly boundaries are still not properly defined and the boundary register are also not prepared and updated. It is, therefore, suggested that Divisional Forest Officer may take necessary step for getting demarcation of forest land from Revenue Authority under Section 107 of the H.P. Land Revenue Act, 1954 for ascertaining the position of BPs and extent of encroached land on spot and after that BPs be erected on spot accordingly and BPs register be maintained along with GPS location etc. for record. In the absence of old DPF notification, BPs register and proper demarcation, there have been lot of encroachment on forest land. Detailed boundary registers are required to be maintained for the demarcated protected forests and newly demarcated protected forests. All DPF and listed UPFs shall be demarcated in first five years of the plan and the BPs shall be constructed in dry masonry stone instead of cement concrete as the same is not feasible in high lying forests. To avoid recurring cost of maintenance, it is suggested that all BPs especially near habitations and low lying forest area, be constructed with stone masonry in cement mortar.

XI+2.9 Periodic Checking of Boundaries:

Little attention has been made for checking of boundaries of the forests. Therefore, it has been suggested that boundaries should be checked at regular intervals for proper maintenance and repair. The checking should be done as per norms fixed are tabulated in the table No. XI+2.1

Table No. XI+2.1

Forest Guard	100%
Dy. Ranger	50%
Range Officer	25%

ACF	10%
DFO	2%

The quinquennial programme for checking of boundaries is prescribed and is tabulated in the table No. XI+2.2

Table No. XI+2.2

Year of boundary checking	Forest/ No. of compartments prescribed		
	Arsu	Chowai	Nither
	Cmp. No.	Cmp. No.	Cmp. No.
2020-21, 2025-26	R/1 C-I, C-II, C-III, 1/4 Whole, 1/5 C-I(a), C-Ib, C-II(a), C-II(b), C-III, C-IV, 2/7 Whole, 2/16 C-I, C-II, C-III, C-IV	R/5 Whole, 1/12 C-I, C-II, C-III, 1/27 C-I, C-II(a), C-II (b), C-III, C-IV, 1/31 C-I, C-II, 1/35 C-I, C-II, C-III, C-IV, 2/24 Whole, 2/30 C-I, C-II	1/15 C-I, C-II, C-III, 1/24 C-I(a), C-I(b), C-II, C-III
2021-22, 2026-27	R/2 C-I, C-II, C-III, 1/6 C-I, C-II, 2/4 Whole, 2/5 Whole, 2/6 Whole, 2/8 Whole, 2/9 Whole, 2/10 Whole, 2/17 C-I, C-II, C-III	R/6 Whole, 1/13 C-I, C-II(a), C-II (b), C-III, C-IV, C-V(a), C-V(b), C-VI, C-VII(a), C-VII(b), 1/33 C-I, C-II, 1/36 Whole, 2/25 Whole, 2/31 C-I, C-II	1/8 C-I, C-II, 1/16 Whole, 1/18 C-I, C-II, 2/21 Whole
2022-23, 2027-28	R/3 C-I, C-II, C-III (a), C-III (b), 1/7 C-I, C-II, C-III, C-IV, 2/11 C-I, C-II, C-III, C-IV, 2/18 C-I, C-II	R/7 C-I, C-II, 1/19 Whole, 1/20 Whole, 1/21 Whole, 1/22 Whole, 1/25 Whole, 1/29 C-I, C-II, 1/34 C-I, C-II, 2/26 Whole, 2/27 Whole, 2/28 Whole, 2/32 C-I, C-II, , 2/33 Whole	1/9 C-I(a), C-I(b), C-I (c), C-II, 2/20 C-I, C-II
2023-24, 2028-29	1/1 C-I(a), C-Ib, C-II(a), C-II(b), C-III, 2/1 C-I, C-II, C-III, C-IV, C-V, 2/19 C-I, C-II, C-III, C-IV	R/8 Whole, 1/23 C-I, C-II, 1/28 C-I, C-II, C-III(a), C-III (b), C-IV, C-V(a), C-V(b), 1/32 C-I(a), C-Ib, C-II(a), C-II(b), C-III 2/22 C-I, C-II,	1/10 C-I, C-II, 1/17 C-I, C-II, C-III, C-IV
2024-25, 2029-30	1/2 C-I, C-II, 1/3 C-I, C-II, C-III, C-IV, 2/2 Whole, 2/3 C-I, C-II, 2/13 Whole, 2/14 Whole, 2/15 Whole, 2/12 C-I, C-II,	1/11 C-I(a), C-I(b), C-II, C-III, 1/26 C-I(a), C-Ib, C-II, 1/30 C-I, C-II, C-III(a), C-III(b) C-IV (a), C-IV (b), C-V, 2/23 Whole, 2/29 C-I, C-II, 2/34 Whole	R/4 Whole, 1/14 C-I, C-II, C-III, C-IV(a), C-IV(b)

Total 178 numbers of listed III Class UPFs are required to be converted into Demarcated Protected Forests and necessary entries of the new DPFs in the revenue record is required to be ascertained and the position of construction of boundary pillars of these newly notified DPFs may be recorded and entered in the boundary pillar register of the Division

XI+2.10 Compartment and Sub-compartment Boundaries

These boundaries have been shown on the management and stock maps and are also described in the Compartment History files. The sign board indicating the compartment and sub-compartment though exist in some forests of this division at places but are required to be prepared and affixed on prominent sites/locations indicating the Compartment No. It is also suggested that such board should be fixed at all prominent points especially where the inspection paths, bridle paths cross the boundaries of the compartment and sub-compartments.

XI+2.11 Maps:

Two sets of stock maps showing necessary details for each forest on 1:15000 scales have been prepared and appended in the respective compartment history files. The administrative map has also been prepared on 1:50000 scale and is lying with Divisional Forest Officer, Anni. The detail of survey sheets/maps available in the division is given in Chapter-I, Para 1.13

XI+2.12 Beat Map:

Each forest guard should be provided with a map of his beat on 4"=1 mile scale showing the boundaries of all the forests, position of boundary pillars, included cultivations inspection and bridle paths etc. The Range Officer/DFO should check these maps during field tours and should ensure that these are kept up to date.

XI+2.13 Water Supplies:

Water supply is deficient in Divisional Headquarter and Arsu Range. Water supply though available at Divisional and Arsu Range Head Quarter yet it requires proper maintained. This should be ensured by constructing a spacious over head tank which may supply water to office and forest colony at Luhri apart from Inspection Hut at Luhri and FRH, Nirmand. Similarly the water supply needs to be strengthened at Inspection Hut, Sargha by taking the water from adjoining source.

XI+2.14 Rains and Snow Gauges:

Rain and snow gauges are available in Arsu, Chowai & Nither Ranges of this Division. These gauges need to be repaired. The rain and snow gauges should also be maintained and put to use. The new rain and snow gauges are also required to be installed in FRH, Chowai, FRH, and Nither. It is, also, recommended that Rain gauge should be installed at Divisional Head Quarter at Luhri.

XI+2.15 Timbers for Right Holders:

Right holders requirements of timber are increasing manifold day by day in view of the general rise in the standard of living. As far possible, local demands of timber will be met with from the salvage trees as per H.P. Govt. Notification No. FFE-B-A (3) 4/2015 Dated: Shimla -2, the 26 February, 2016 under Himachal Pradesh (Timber Distribution to the Right Holders) Rules, 2016, in exercise of recorded rights. The trees for agricultural implements, repairs of water channels, and other ceremonial purposes will be allowed as per settlement regulations in such a way that these species are not ruthlessly exterminated. The detail grant of timber have also been discussed in the Chapter-I, Part-I.

XI+2.16 Forest Rights and Duties:

The bartans are subject to the condition that bartandars will be responsible for the protection of the forests in which the bartans are exercised i.e. they are responsible that no trees are felled without permission and the forests are protected against fire. In case of failure, the rights can be curtailed or suspended. Another condition attached with bartans is that, the forests whether demarcated or un-demarcated cannot be burnt to get fresh growth of grass. Grazing, grant of timber, lopping & collection of minor forest produces are some of the important Bartans admitted in the settlement report. This excellent rule has gone a long way in preserving forest wealth of this tract if sincerely to be followed by the field functionaries.

In view of the Hon'ble court it has been pointed out that "right and duty co-exist. There cannot be any right without any duty and there cannot be any duty without any right" Our Constitution lays down the fundamental duty of every citizen "to protect and improve the natural environment including forests, lakes, rivers and wild life and to have a compassion for living creatures". A feeling should be generated in them that there should be decreased dependence on the forests and encourage them to avails acceptance of the alternatives. It is a social obligation and get let every citizen be reminded that it is his fundamental duty.

The Hon'ble High Court has also further pointed out that there is no right to claim compensation by means of filing writ petition. When a person performs his duties and unfortunately suffers injury or dies, it is, for the State to decide whether it should grant adequate compensation to its citizen or not.

XI+2.17 Person bound to Assist Forest Officer:

Section 79 (1) of the Indian Forest Act, 1927 makes obligatory on every person, who exercises any right in a reserved or protected forest or who is permitted to take any forest produce from forest or Govt. employee shall be bound to furnish without un-necessary delay to the nearest Forest Officer or Police Officer any information with respect to any commission of forest offence, and shall forthwith take steps, whether so required by Forest Officer or Police Officer or not

- (a) To extinguish any forest fire in such forest of which he has knowledge or information;
- (b) To prevent by any lawful means in his power any fire in the vicinity of such forest of which he has knowledge or information from spreading to such forest, and shall assist any Forest Officer or Police Officer demanding his aid.
- (c) In preventing the commission in such forest of any forest offence and when there is reason to believe that any such offence has been committed in such forest in discovering and arresting the offender.

And any violation of the provision of this Section is punishable under Section 79(2) with imprisonment for term which may extend to one month, or with fine which may extend to two hundred rupees or with both.

Therefore, field functionaries/staffs must take action accordingly so that the object of fundamental duty could be achieved.

XI+2.18 Timbers as Free Grant:

The right holders are entitled to grant of trees free of cost for the sake of marriage ceremonies, agricultural implements and religious ceremonies, after obtaining prior permission from the Forest Department. However, free grant of timber for cremation of the dead is permitted and permission of the department is not required and the information of trees so cut or remove is too given within 15 days to the Forest Guard concerned. Resultantly, these days right holders are misusing this practices and trees are felled after cremation of the dead body and use the same for building purpose.

The liberal rights and concessions are admitted in the Forest Settlement Report prepared by Anderson. These rights including timber for temple have not been touched upon by the State Govt. in its notification dated 2-1-2010 and would remain to be exercised as they were in the past. For the regulation of grant of wood and avoid of misuse of rights in present system vogue in the department, trees shall be divided into two classes; the first class species of trees must be declared as reserved under Section 30(a) of IFA, 1927 and the second class containing all other species. The trees of second class may be granted by the Range Officer so long as these are not used for building purposes of any kind, whatsoever, and where trees of second class are available, unsound or malformed or crooked trees of the I Class with the exception of listed second class species can be granted. However for actual burning of dead, a sufficient quantity of wood from the listed second class species trees may be cut without being first marked provided that the notice is given to local forest official within ten days.

Therefore, Divisional Forest Officer to take up necessary steps, with the Government for the same purpose and may notify the rules and notification under Section 30 (a) of Indian Forest Act, 1927. Similarly, the rules applicable to the un-classed forests i.e. other then DPF under Section 76 of the Indian Forest Act, 1927 may be notified in public interest so that the forest resources shall be used or removed in such a way that the resources are perpetuated and not endangered.

XI+2.19 Grazing:

The problem of grazing is very important because it has far reaching effects on forest growth and land and water conservation. There is on one hand, the problem of local Zamindars and on the other, of outside professional graziers like Gujjars and migratory graziers. In order to reduce the incidence of grazing all forms of grazing by the Annimals of the professional graziers should be restricted as per the provision of Settlement Report so that more grazing grounds are available for local Zamindars.

It is essential to close effectively, plantation, and regeneration areas in immediate vicinity of villages. But as the closures are the resented and lead to incendiarism, it is advisable to restrict them to the minimum essential area and time necessary for establishment of plantation and regeneration. Not more than 30% of the area should be closed at a time to avoid causing resentment and hardship to local graziers. The closure should not be more than 10-15 years at a time. Cattle should be admitted as soon as the young plants are established. All closed regeneration areas near villages must be fenced effectively. The grazing requirement of livestock of villages located in and around forests should be addressed within the carrying capacity of forest areas.

XI+2.20 Closure Notifications:

This has been discussed in detail in every Working Circle and suggested that the notification for such closure should be got issued under Section 30 (b) of Indian Forest Act, 1927. The area will have to be closed for grazing/lopping till the regeneration is established.

XI+2.21 Lopping:

Lopping especially of coniferous species of trees has caused wide spread damage in the past. The forests close to the habitations have suffered on this account. Strict control has to be exercised to curtail this right within the permissible limit. Local communities need to be made aware of the impact of their consumption on forest resources. Persons requiring the fuelwood could obtain by lopping their requirements as per the norms of Forest Settlement Report. Heavy and indiscriminate lopping of Deodar during Rainy season makes Deodar susceptible to attack by *Fomes annosus* fungus. In blue pine heavy lopping results in attack by beetle *Pityohenus scitus*. Severe attack by this beetle make tree dry within 6-7 months. Heavily lopped Chir- pine trees of diameter 28-57 cms are susceptible to infestation by destructive bark borer *Polygraphus longifolia*. The sale of fuelwood head loads from forests by individual sellers particularly in Rampur Town adjoining to the Anni Forest Division has now been stopped. Similarly lopping of forests beyond the prescribed limit as per the provision of Forest Settlement Report must stop and violation of cases not to be compounded and be treated as forest offence under Section 33 of Indian Forest Act, 1927. The State Govt. is now implementing the Govt. of India's Scheme "Ujjwala Yojana" which is an alternative source of fuelwood especially LPG connections which are being provided at free of cost and subsidized rates depending upon their economic conditions of the local people. The local residents should be encouraged to take the fuelwood from fuelwood sale depot of this Division. Similarly there should be policy of the State Govt. for providing an alternative source of fuel. The solar energy also needs to be given a much greater attention to reduce the biotic pressure from forest biodiversity.

XI+2.22 Fire Protections:

Forest fires are very frequent in low lying area of this division. Most of these fires incendiary, started by villagers to get new flush of green grass. The worst to suffer are the coniferous forests, where regeneration is damaged by such fire. The detail of fire protection measures has been described in Chapter No. IX and taken care of accordingly. The budgets under fire lines and controlled burning should be demanded regularly so as to maintain fire lines, engage fire watchers in the fire prone areas. Publicity and Extension for education of local population regarding fire protection etc. should also be done. While on tour, the DFO and his staff should personally contact villagers and Panchayats members and try to convince them, inter-alia, about the harmful effects of forest fires and gravity of forest offence under the Indian Forest Act, 1927 and IPC. Other fire preventive measures have also been discussed in Chapter-IX, Part-II.

XI+2.23 Encroachments:

Encroachments are common throughout the Division. All categories of forests are affected with this menace but there have been large scale encroachments in the garb of enactment of Forest Rights Act, 2006 {Scheduled Tribes & other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006}, almost all the III Class listed UPFs or other land in absence of proper demarcation and record of such areas. Boundary pillars have been displaced and the forests have been converted into orchard and agricultural fields. Many of the boundary pillars in DPFs have been shifted, washed away or removed from their original position in adjoining to cultivated private land. This should be looked into priority. It is important to note that included cultivation as identified during the Anderson's Forest Settlement, in the demarcated protected forests have not been properly delineated and proper record of such lands have not been maintained by the

forest department. These cultivations have increase in area through encroachment over a period of time and trees adjoining have been removed through griddling and consequent drying etc, there is an urgent need for proper demarcation of land from competent revenue authority and reconciliation with revenue record. The legal action should be initiated against the encroachers and forest lands should be liberated from unauthorized possession. Other encroachment preventive measures have also been discussed in detail in Chapter-IX, Part-II.

XI+2.24 Illicit felling, illegal mining and Poaching:

The preventive and control mechanism under the various Act has been discussed in detail in Chapter-IX, Part-II so no detailed recapitulation is necessary. DFO should make it a point to get a certificate from field staff on monthly basis and plan the combat of forest offences under the Act. The various forests have been categorized as sensitive forest depending upon the frequency of illicit felling cases that occurred in the past is given in the table No. XI+2.4.

Table No. XI+2.4

Range wise list of forests prone to illicit felling in Anni Forest Division

Sr. No	Name of Range	Name of sensitive Forests	Compartment No.	Area in Hac.
1	Arsu	1/3 RAMGARH KANDI	C-III	41.28
		2/3 SIARUNAL	C-I	71.23
		2/3 SIARUNAL	C-II	38.44
		2/6 GADA MAWA	WHOLE	35.61
		2/16 BERNAGI	C-I	52.2
		Shalat	6	400.64
		Bail	9	874.15
		Kathanda	12	186.15
		Randal	13	356.12
		Ralu	14	311.24
		Pankua	19	234.7
		Banaya	20	90.95
		Rajouri	22	60.24
		Deothan	23	84.98
		Kothi	28	117.36
		Shil	29	283.28
		Neger	30	198.3
		Tinder	31	246.85
		Sarga	34	68.8
		Neokundar	35	364.22
		Kindla	38	305.53
		Kimcha	39	655.39
		Nal	40	32.37
		Dharmot	43	194.24
		Basalai	45	145.68
		Sharshaya	47	244.88

		Total Arsu Range		5694.83
2	Chowai	R/7 Takrasi	C-I, II	118.98
		1/21 KUI JHAKAR	Whole	12.54
		1/22 BARU BHARRED	Whole	63.54
		1/33 Kalandidhar	C-Ia, Ib, IIa, Iib& III	72.03
		2/27 GOHAN	Whole	359.37
		2/32 Sharagshil	Whole	218.54
		Batot	111	16.18
		Shagan	152	109.26
		BishlAnni	154	72.84
		Pankhar	149	69.89
		Shilti	177	313.63
		Gadhari	173	137.6
		Ropa	167	115.33
		Tarala	159	84.98
		Kutwa	157	184.13
		Dhar	168	182.1
		Mathvi	105	10.11
		Mishta	127	64.75
		Chajut	107	80.93
		Total Chowai Range		2286.73
3	Nither	1/17 GWAN	C-I	13.76
		1/17 GWAN	C-II	12.14
		1/17 GWAN	C-III	14.97
		1/17 GWAN	C-IV	29.54
		Tihni	50	299.46
		Katoha	53	299.46
		Bai	54	145.68
		Soidhar	55	137.59
		Sarli	56	242.81
		Lunalot	57	404.68
		Thalin	61	242.81
		Tandi	69	174.02
		Kalog	77	354.1
		Dagehan	74	72.84
		Sadari	75	392.54
		Bashala	76	190.2
		Ghatu	72	194.24
		Khatal	78	20.23
		Sharti	82	203.97
		Chebari	83	269.09
		Nither	84	218.58
		Moin	86	235.94
		Shush	109	74.86
		Total Nither Range		4243.51

		G.Total	12225.07

XI+2.25 Communication Network:

Under present circumstances, the huge network of roads exists in the Division and to cope up with nefarious smuggling of timber, the field staff should have improved communication system. In this respect it is proposed that all the Range Officers, Block Officers and Forest Guards be provided patrolling vehicle at range level and mobile phones or telephone so that the system can work more efficiently to combat the illicit felling, poaching and halted the encroachment on forest land etc.

XI+2.26 Geo-referencing in Forestry Operations:

Geo-referencing is the process of scaling, rotating, translating and desk wing the image to match a particular size and position. The word geo-reference was originally used to describe the process of referencing a map image to a geographic location. Geo-referencing is thus imperative to data modeling in the field of geographic information systems (GIS) and other cartographic methods.

Geo-referencing is crucial to making aerial and satellite imagery, usually raster images, useful for mapping as it explains how other data such as the GPS points relate to the imagery. Very essential information may be contained in data or images that were produced at a different point of time.

Keeping in view the importance and imperativeness of geo-referencing Govt. of India, MOEF vide D.O. No. 13.5/2010-FC dated 11-9-2012 has directed that all the forestry operations in the State should be geo-referenced henceforth and the department will comply with the directions.

XI+2.27 Research and Sample Plots:

The sample plots were identified during the British period and after that no efforts seems to have been taken to locate and identify the same which are now in neglected state in this Forest Division. These sample plots need to be revived and maintained. Divisional Forest Officer, Anni should initiate necessary steps for their proper up keeping. A sample plot for Deodar may also laid in 1/24 Shill near FRH Nither & R/7 Takrasi near FRH, Takrasi. The necessity of laying out such plots needs no emphasis and the Divisional Forest Officer should select suitable areas and request the State Silviculturist to lay them properly.

XI+2.28 Preservation Plots:

No preservation plots exist in the area at present. In view of the necessity for laying out preservation plots of important species, the Divisional Forest Officer should select suitable areas and request the State Silviculturist to lay them properly. It is suggested/recommended that Divisional Forest Officer must take necessary steps to identify the preservation plot during the 1st Year of implementation of the revised working plan which is an important from biodiversity point of view and are recommended for being kept as preservation plot. The Divisional Forest Officer must ensure to lay them properly.

XI+2.29 Roads, Paths & Buildings:

XI+2.29 Roads, Paths & Buildings:

Efficient management of forests is not possible in the absence of good roads & paths. Regeneration forest protection and other forest improvement works cannot be effectively carried out or supervised or control against smuggling or poaching in case the forests are not connected with good inspection path and jeep-able road. The existing roads and paths are detailed in *Appendix-XLIII*, these will be maintained. A large network of roads and paths has been constructed during the past in the area by HPPWD and forest department but there still needs more construction of motor-able road in the forest area. To avoid duplication the Public Works Department and Block Agency should be invariably consulted so that an integrated approach to the road construction work becomes possible under the prior permission of the Govt. of India under Section 2 of Forest (Conservation) Act, 1980 and Forest Rights Act, 2006 {Scheduled Tribes & other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006}. DFO must ensure that no works released to non-forestry activities should be allowed to be taken up on forest land.

The present buildings i.e. residential accommodations and inspection huts/rest houses are available for subordinate and protection staff and also for inspecting officers at most of the places. Still some of the localities lack this facility and therefore, the following buildings are proposed to be constructed. DFO may modify this according to administrative needs during the currency of the Plan. The proposed new buildings are tabulated in the table No. XI+2.5

Table No. XI+2.5

Proposed New Buildings/Roads

Name of the Range	Block	Beat	Name of Building	Location	Type of Buildings/Roads
Arsu	Nirmand	Nirmand	Store	Nirmand	Type - I
	Nirmand	Nirmand	Special Duty Quarter/Gang Hut	Nirmand	
	Nirmand	Nirmand	Range Office Complex Chowkidar Quarter	Nirmand	Type-I
	Nirmand	Nirmand	Rest House Chowkidar Quarter	Nirmand	Type-1
	Arsu	Palli	Trekker Hut	Pankwa	
	Arsu	Tharvi	Trekker Hut	Tharvi	
	Khargha	Khargha	Forest Guard Quarter	Khargha	Type-II
	Kharga	Sarga	Approach Road to Kasumba nursery and I/H Sarga	Sarga	Jeepable
	Nirmand	Averi	Forest Guard Quarter	Averi	Type-II
	Nirmand	Sarahan	B/Path from Sarahan to Bashleu Pass	Sarahan	B/Path
Chowai	Takrasi	Karshala	Fgd Hut Karshala	Deem	Type-II
			Fgd Hut at Lohal	Lohal	Type-II
		Kuinr	Fgd. Hut at Kuinr	Kuinr	Type-II
		Lohal	Nature Interpretation and Service Centre	Jalori Pass	-

		Gad	Fgd Hut at Gad	Gad	Type-II
		Chowai	I-Hut at Ropri	Ropri, Anni	Type-II
		Namhong	Fgd Hut Namhong	Namhong	
		Chowai	FRH Chowai	Chowai	
			RFO Residence Chowai	Chowai	
	Khanag	Khoila	Fgd Hut at Kohila	Kohila	Type-II
			Fgd Hut at Deem	Deem	Type-II
Nither	Dalash	Luhri	Residential Quarter	Luhri	Type-II (4 No.s)
			Residential Quarter	Luhri	Type-I (4 No.s)
		Kandagai/	Fgd Hut Kandagai	Kandagai	Type-II
	Nither	Tandi	Fgd Hut at Tandir	Tandi	Type-II

XI+2.30 Ban on Green Fellings:

The Govt. of HP had imposed a complete ban on green fellings for the year 1993-94 in high conifer forests. This resulted in complete stoppage of regeneration fellings and thinning. The ban has since been lifted by a cabinet decision during 1997, yet due to an order of the Hon'ble Supreme Court of India in CWP No. 202 of 1995 titled as T.N. Godavarman v/s Union of India dated 12-12-1996 and 14-2-2000 and there remains a complete ban on green felling till date. The detail of felling in Govt. forests has been discussed in Chapter-I, Part-II and may continue to be followed till the disposal of affidavit filed by the H.P. Govt. before the Hon'ble Supreme Court of India.

XI+2.31 Land Bank:

The land bank so identified shall be surveyed demarcated and declared as Protected Forest under the provision of Chapter-IV of Indian Forest Act, 1927. This has been discussed in detail in Chapter-VII, the plantation (Overlapping) Working Circle.

XI+2.32 Diversion of Forest Land:

The Forest land cannot be diverted to any non forestry use without prior approval of Govt. of India under Forest (Conservation) Act, 1980. The Hon'ble H.P. High Court has also taken a serious note of violation of FCA, 1980 in the Contempt Petition No. 56/2009 titled as Kuldip Singh Chauhan V/S Balbir Thakur and others dated 28-8-2009 and has directed not to undertake the construction of any road in the forest area without the mandatory permission under the FCA, 1980. Therefore field must ensure that no work related to non forestry activities should be allowed to be taken up without prior approval of Govt. of India under FCA, 1980 and in terms of the Supreme Court's order dated 12-12-1996.

XI+2.33 Non-Timber Forest Produce:

Right holders have recorded rights to collect fruits, edible seeds, medicinal roots leaves, and roots for the preparation of dyes and honey for their own use for domestic purpose and sale of forest product free of cost under the provision of Forest Settlement Report. The export of NTFP is regulated under the Himachal Pradesh Forest Produce Transit (Land Routes) Rules, 1978. No species are allowed to extract from the prescribed area which has not been approved in extraction cycle by the competent authority. The extraction of NTFP shall be done in a sustainable manner and so as not to cause any ecological or environmental damages. Micro planning should be undertaken by the Divisional Forest Officer with consultation of HFRI Shimla to conserve, manage, scientifically harvest and sustainable utilize medicinal plants found in forest areas. There

is a great scope for growing medicinal plants on private agriculture holdings, which would require the supply of plants, marketing assistance and technical inputs at least in the initial stages and this can be met from the Agriculture, Ayurveda departments as well as forest department. The detail of NTFP extraction, collection, export and right holders requirements have been discussed in detail in Chapter-VIII, Part-II.

XI+2.34 Saw Mill and Depot:

In Anni Forest Division, there are 42nos Saw Mills registered. Few saw mills are functional and some are non functional. Besides this, there are 35No.s of Imported Timber Sale Depot and 10No.s Furniture Depots in this Division. One No. of Fuelwood Sale Depot also exist in Chowai Range of this Division which is being run by HPSFDC Ltd., Rampur Bushahar. The detail of the Saw Mill and Depots is given in **Appendix No.XLVI, XLVII & XLVIII respectively**. The Hon'ble Supreme Court of India in T.N. Godavarman v/s Union of India dated 16-11-2002 held that no state or Union Territory shall permit any unlicensed Saw Mills, Veneer, ply wood industry to operate and they are directed to close all such unlicensed unit forthwith No state or Union Territory will permit the opening of any Saw Mills, Veneer, Plywood industry without prior permission of the Central Empowered Committee. The Chief Secretary of each state will ensure strict compliance of this direction. There shall also be no relaxation of rules with regard to the grant of License without previous concurrence of the Central Empowered Committee. In compliance of Hon'ble Supreme Court order no saw mills are being registered under the provision of H.P. River Rules, 1971.

The following guidelines/instructions are issued for shifting and or change of ownership of the existing licensed saw mills:-

- i) Where change of location of the existing license saw mill is not involved, change of ownership in case of inheritance or purchase of the saw mill shall be allowed by the DFO concerned.
- ii) The cases of shifting of existing licensed sawmills including change of ownership (whether inheritance or through purchase) within the same Forest Division shall within the same circle by Conservator of Forests concerned, from one division to another from the jurisdiction on one circle to another shall be allowed with the prior approval of the Principal CCF HP.
- iii) Cases regarding change of ownership and /or shifting of other wood based industries will be decided by the Principal CCF HP.

Provided that:

- The shifting of sawmills shall not be allowed in a routine manner but only after examining the merit of each case.
- The parameter/conditions applicable for registration of new sawmills shall be fulfilled in case of shifting also.
- In no case, the capacity of the unit shall be allowed to be enhanced.
- The cases in which the process for shifting and / or change of ownership of sawmill was started as per the prevalent instructions prior to clarification conveyed by the Law Department vide Principal Secretary (Forests) to the GoHP letter No. FFE-B-E (3) 10/2005 dated 27th August, 2005 shall be decided by the competent authority on merit of each case as indicated above in Para 2.
- The above instructions regarding shifting of saw mills shall not be applicable on the unlicensed sawmills allowed to be registered by the CEC vide its proceedings dated 31.03.2008 as the same were allowed to be registered on specific conditions.

- As per proceeding dated 31.03.2008 of the Central Empowered Committee no new license for any saw mill or wood based industry shall be issued till specifically allowed by the CEC.

Depot is being registered under the provision of H.P. (Sale of Timber) Act, 1968 as conveyed by Conservator of Forests Rampur vide office memo No. 2890 dated 3-8-2007. The definition of depot is given in Para 2 (ii) of H.P. (Sale of Timber) Rule, 1969 under which “depot” means any building or place where timber is brought or stored for sale, as it is or processed through sawing or any other method/process. Furniture manufacturing involves storing and processing of wood for manufacture of furniture hence any units/shops involving in storing and processing of wood of manufacture of furniture would also come under the meaning of “depot” and required to be registered under the HP (Sale of Timber) Act, 1968 and governed under the rules made there under. However, shops procuring and selling readymade furniture only, and not modifying/ processing timber for manufacture of furniture would be exempted from the provisions of the above Act.

Regarding Registration of Timber Fuel wood Depots Pr. CCF vide Letter No. Ft-20-17/77 (s) 16-10-98 has given the following guidelines for future management of the depots.

- (i) No new private sale depot shall normally be registered in future and in case of demand, HPSFC may be requested to open the depot. However, in Notified Area Committees and Municipal Committee areas, the request for opening of timber, fuelwood and charcoal depot may be considered by C.F. on merit after ascertaining quarterly demand based on facts and going through supply from existing depot, if any.
- (ii) The depots which have carried-out any transaction in past two years may not be renewed.
- (iii) A clause should be added in the registration deed that depot can be cancelled by registering authority to the relevant rules / guidelines etc.
- (iv) If at a particular place depots of HPSFC exists, then in future private sale depot may not be allowed within a radius of 15 Km. In case any depot holder is found violating the provisions of H.P. (Sale of Timber) Act, 1968, Indian Forest Act, 1927 and other Acts and Rules, the action should be initiated as per as per Rules, / Instructions on the subject.

Regarding registration of Imported Timber Sale Depot, HP Government vide letter No. FFE-B-F (15)-1/2008-Vol-1 dated 24-7-2012 has accorded permission that Imported Timber Sale Depots will be opened in urban/semi urban/rural areas taking into account the demand of people. As a result of this decision, there will be no restriction of opening of Imported Timber Sale Depot. Only Imported Timber will be purchased or sold by the registered depot under the H.P. (Sale of Timber) Act, 1968.

XI+2.35 Felling in Private Areas:

In Anni Forest Division the private areas also bear good tree growth both in compact patches and in the cultivated fields along the boundaries of forest. The main economic species are Deodar, Kail, Spruce, Fir etc. In pursuance of H.P. Govt. Order No. FFE-B-A (3) 4/99 dated Shimla-2, the 10th September, 2002 in Anni Forest Division, the owner can fell trees upto three trees of coniferous (except Chil trees) and in case of Chil and other trees 5 trees each year without permission for their bonafide domestic and agricultural use, up to 10 trees with written permission of the Range Officer concerned and more than 10 trees with written permission of the Divisional Forest Officer concerned. There will be no restriction on the number of trees to be felled for purposes of bonafide domestic uses of fodder and fuel. There shall also be no prohibition or

restriction on felling of species of trees of Poplar, Eucalyptus, Albizzia, Bahunia, Willow and Mulberry.

Provided further that the trees for sale shall be felled in accordance with the 10 years felling programme approved by the State Govt. and in compliance of the Supreme Court's order dated 12-12-1996 and 8-5-2009.

The felling of trees in private forests in State of Himachal Pradesh, the Apex Court order dated 8-5-2009 held that felling of trees from the forest area approved for non forestry use under Section 2 of the Forest (Conservation) Act, 1980 may continue to be permissible.

Compact wooded blocks of above 5 hac. which are otherwise not notified/recorded as forest, should be treated as "forests" for the purpose of the Forest (Conservation) Act. Felling of trees and non forest use of such areas should be permissible only after obtaining approval under the Forest (Conservation) Act, 1980. Thus where the land in question recorded as Van/Bani/Vani or Jungle in revenue record felling should be permissible under Forest (Conservation) Act, 1980 only.

Felling of trees in non forest areas should be strictly regulated as per the provisions of the H.P. Land (Preservation) Act, 1978.

XI+2.35.1 H.P. Land Preservation Act, 1978:

It is notified for the information of all concerned and interested that the Ten years Felling Programme for the felling of trees except bamboos for sale from private lands within the jurisdiction of Anni Forest Division framed under provisions of Section 4 of H.P. Land Preservation Act, 1978 and approved by H.P. Govt. vide letter No. Fts (F) 13-30/89 D/sala) dated 13/7/89 from Deputy Secretary (Forests) to the Govt. of Himachal Pradesh Shimla-2 addressed to Pr.CCF H.P. Shimla-1.

Table No. XI+2.6

Ten year felling Programme in respect of Anni forest Division w.e.f. (2019-20 to 2028-29)

Ten Year Felling Programme in respect of Anni Forest Division at Luhri						
Sr.No.	Year	Name of Division	Name of Range	Name of Block	Name of Beat	Remarks
1	2019-20	Anni at Luhri	-	-	-	
2	2020-21		-	-	-	
3	2021-22		-	-	-	
4	2022-23		Nither	Margi	Nore	
					Katmore	
					Margi	
					Ghatu	
5	2023-24		-	-	-	
6	2024-25		-	-	-	
7	2025-26		Nither	Nither	Sarahar	
		Tandi				
		Nither				
		Moin		Moin		
				Koil		
				Ghorla		

				Dalash	Kandagai	
					Dalash	
					Luhri	
			Arsu	Kharga	Tunan	
					Kharga	
					Kindla	
					Sarga	
				Nirmand	Averi	
					Nirmand	
					Pujarli	
					Brow	
			Arsu	Arsu	Buini	
					Tharvi	
					Arsu	
					Pali	
				Sarahan	Sarahan	
					Tharla	
					Jawagi	
					ShamAnni	
			Chowai	Chowai	Namhong	
					Chowai	
					Kutwa	
					Gad	
				Khanag	Kot	
					Kohila	
				Khanag	Deem	
					Tarala	
			Chowai	Paneo	Patarna	
					Bai	
					Poeg	
					Karana	
				Takrasi	Karshala	
					Tharvi	
					Kuinr	
					Lohal	
			Chowai	Chowai	Haripur	
8	2026-27					
9	2027-28					
10	2028-29					

XI+2.35.2 Punishment for Offences:

Section 16 provides that any person who, within the limits of any area notified under Section 3 commits any breach of regulation made, restrictions or prohibitions imposed, order passed or requisition made under section 4,5,6 or 9 or obstructs/resists in any way whatever the execution of the acts or things done under section 10 shall be punished with imprisonment for a term which may extend to 6 months or with a fine which may extend to rupees 500/- or with both. Section 7 provides that every order made under Section 4, 5 or 6 shall be published in the official Gazette and shall set forth the State Government is satisfied, after due inquiry, that regulations restrictions, prohibitions or directions contained in the order are necessary for the purpose of giving effect to the provision of the Act. The Forest Officers also have powers to take cognizance of offences in such areas as per the provisions of Section 52, 54 to 62, 64, 66 and 73 of Indian forest Act, 1927 under Section 17 and to compound such offences under Section 19 of the Act.

XI+2.35.3 Forest Produce (Regulation of Trade) Act, 1982:

The provision of H.P. Forest Produce (Regulation of Trade) Act, 1982, regarding regulation of the trade of forest produce, no owner of forest produce shall sale of any forest produce to a person other than the State Govt. or the agent appointed under Section 3 of the Act and no person other than the State Govt. through its authorized officer or agent i.e. H.P. State Forest Corporation appointed under Section 3 shall purchase forest produce specified in the schedule annexed to this Act from any owner under Section 4 of the Act. Forest produce purchased by the State Govt. through its authorized officer or agent shall be sold or otherwise disposed of in such manner as the State Govt. may direct. "Forest Produce" means trees of any of the species standing, felled or otherwise fashioned, specified in the scheduled annexed to this Act and any other produce declared as such by the Govt. from time to time by a notification published in official Gazette. Contravention of any of the provision of this Act shall be punishable with imprisonment which may extend to one year or with fine which extend to five thousand rupees or with both and the forest produce in respect of such contravention has been made shall be forfeited to the Govt. under Section 12 of the Act or to compound such offences under Section 15 (4) of the Act provided that no case shall be compounded by any authority competent to compound without providing for the forfeiture of the forest produce involved in the said case to the government in lieu of prosecution for the offence.

XI+2.35.4 Forest Produce Transit (Land Routes) Rules, 1978:

The provisions of H.P. Forest Produce Transit (Land Routes) Rules, 1978, regarding transport/export of forest produce, shall apply to the forest produce obtained from such areas also. The Rules regarding registration of property mark(s), issue of export/transport pass, issue of challans etc. should be strictly enforced. Contravention of these rules is punishable to imprisonment for a term which may extend to 6 months or with a fine which may extend to rupees 500/- or with both. The penalties will be doubled in cases where the offence has been committed after sun set or before sun rise, or after resistance to the lawful authority or where the offenders have been previously convicted for an offence.

In the year 1991 all restrictions were removed on felling of following six species vide notification No. fts. (a)3-1/84 Part dated 8/2/1991.

- i. Popular
- ii. Eucalyptus
- iii. Albizzia
- iv. Bauhinia
- v. Willow
- vi. Mulberry

Accordingly felling of these species does not attract the provisions of H.P. land Preservation Act, 1978 and the forest department has little control over the felling and transport/export of the produce obtained there from.

Since the management of the private area is not the concern of forest department neither there can be any prescription for these areas nor can be yield from these areas be regulated /controlled in the plan. However the following two broad objectives should be kept in mind while implementing the legal provisions in respect of fellings from private areas.

- i. The overall impact of the felling should not lead to the environmental degradation of the area.
- ii. There should no damage to the govt. forests of adjoining area because of the negligence of the staff of forest department as well as revenue department.

In order to safeguard above two objectives following guidelines may be followed:-

- i. Marking rules for the marking of various species should be strictly adhered to.
- ii. The provision of planting three plants in lieu of every tree felled should be strictly adhered to. The registration of the person who does not comply with this provision should be cancelled.
- iii. All legal provisions on the subject should be strictly implemented at the time of marking/demarcation, felling and transport/export of the forest produce.
- iv. The felling of six species as notified by the Govt. notification dated 8-2-1991 on which there are no restrictions under Section 41/42 of the Act, however the transport/export permit should be made compulsory. This will help in ensuring that there is no illicit felling of these species from the Govt. forests.

XI+2.36 Punishments for Offences:

Section 14 provides that if any persons contravenes any of the provisions of this Act or the Rules made there under, he shall be deemed to have committed a forest offence and the resin or resin products, if any, in respect of which such offence is committed shall in, relation to the commission of such offence be deemed to be forest produce and the provisions of chapter-IX of the Indian Forest Act, 1927. Section 16 further provides that no court shall take cognizance of any offence punishable under this Act except on a report in writing of the facts constituting such offence made by a forest officer not below the rank of Forest Ranger or any officer authorized by the State Govt.

XI+2.37 Watershed Management:

Water is one of the most important factors in increasing productivity and forests play an important role in maintaining sustained supply of water in the rivers, nalla and streams for irrigation, drinking, Hydro Electric Projects and various other uses. Water conservation in forests, therefore, deserves special attention and special emphasis should be given on water conservation and water harvesting etc. Water shed management is the priority approach to ensure the land and water resources for sustainable management and to enhance the livelihood of the rural inhabitants. The essence of water shed development programme is proper use of land and water from ridge to valley. The aim of the water shed development programme is to conserve and manage the area, land and water so that the basic need of local people like food, fodder and water are met in sustainable and socially just manner and also to reduce the damaging impacts of soil erosion.

The Government of H.P. has committed to preservation of natural resources and also to increasing the productivity of rural areas through integrated water shed management. Water shed management is the priority approach to ensure the land and water resources for sustainable management and to enhance the livelihood of the rural inhabitants.

XI+2.37.1 Objectives of Watershed Management:

The main Objectives of the watershed management are:-

- **Reduce the damaging impacts of soil erosion:-**It is essential to harvest rain water for the purpose of irrigation, plantations, including horticulture and floriculture, pasture development, fisheries etc. to create sustainable sources of income for the village communities as well as for drinking water supplies.
- **Improve capacity of natural source of water:-**Ensuring overall development of rural areas through the Gram Panchayats and creating the regular sources of income for the Panchayat from rain water harvesting and management.

- Restoring the ecological balance by harnessing, conserving and developing natural resources i.e. land, water, vegetative cover especially through plantation.
- Mitigating the adverse effects of extreme climatic condition such as drought and diversification on crops, human and livestock population for the overall improvement of Catchment areas.
- Encouraging village communities toward sustained community action for operation and maintenance of assets created and for development of potential of natural resources in the water shed.
- Promotion and propagation of non-conventional energy saving devices, energy conservation measures, bio-fuel plantation etc.

XI+2.37.2 Causes of Watershed Management:

- a) Geological Erosion:-** Geological soil erosion represents the erosion of soil in its natural state. Semi-arid and arid soil, which lack protective plant cover, may erode naturally. This erosion takes place at such a slow pace that a balance is always maintained between soil lost by erosion and soil formed from parent material. As far as effect on agricultural lands is concerned geological erosion is not of much consequence. It is responsible for wearing of hills and mountains and is the cause of various land features such as existing canyons, stream channel and valleys etc. Geological erosion is caused mainly by the action of water, wind, temperature and is responsible for soil formations and their distribution on the earth's surface.
- b) Accelerated Erosion:-** When the natural balance is disturbed by human activities, large scale deforestation or leveling of field for cultivation, the process of erosion is increased manifolds. This rapid erosion as a result of human interference is referred to as accelerated erosion or abnormal erosion. This depletes the soil fertility in agricultural lands. The various forces involved in accelerated erosion are.

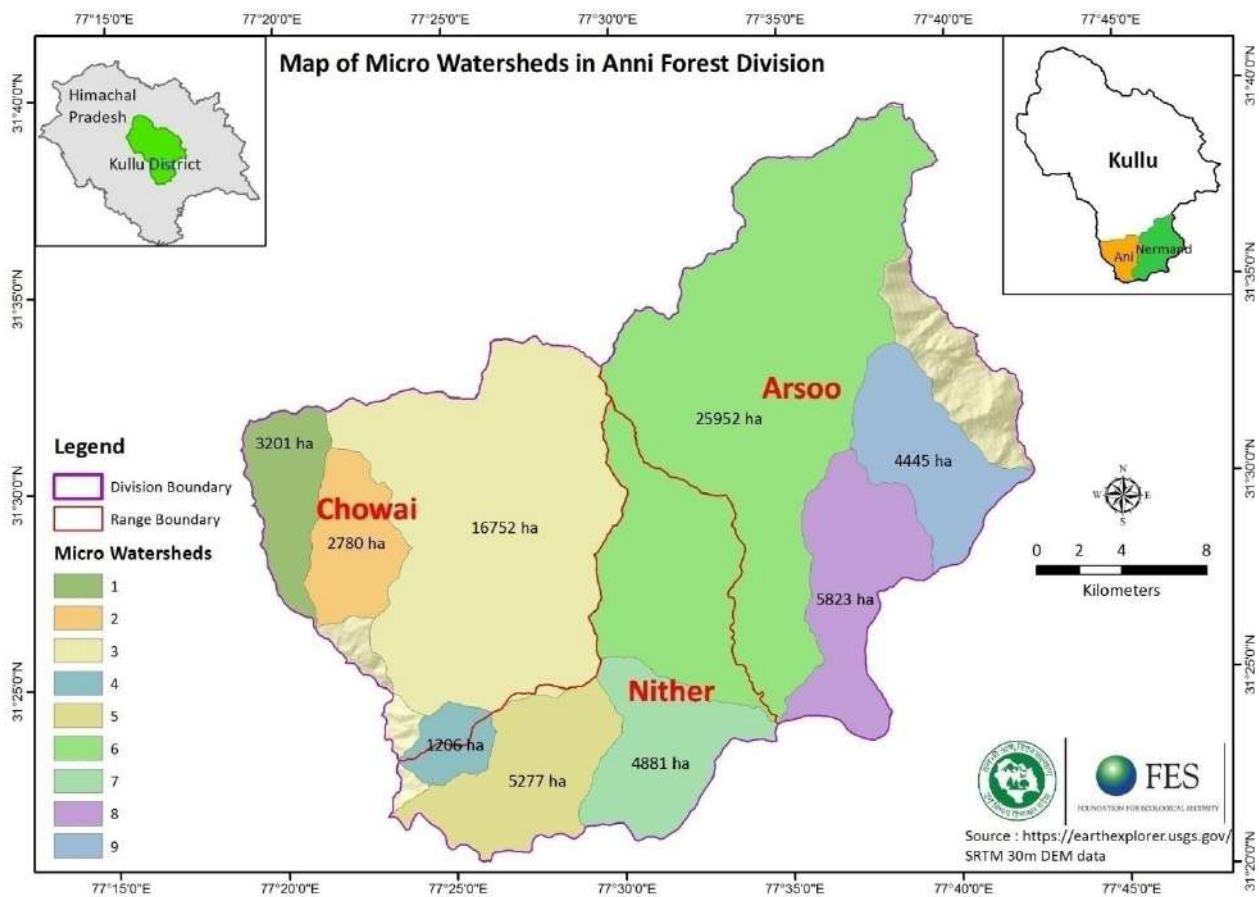
Attacking forces – i) which detach and transport the soil particles.

i) Resisting forces- Which resist erosion.

c) Forms of Erosion.

- i) Rain drop erosion.
- ii) Sheet erosion
- iii) Rill erosion
- iv) Gully erosion
- v) Stream erosion
- vi) Land slide/land slip erosion.

Of the five major river basin in Himachal Pradesh, Satluj basin has the highest potential of producing electricity 9227 MW. To harness this vast potential, several HEP, on river Satluj and its tributaries have been identified and constructed. During the plan under revision, many major and minor Hydro Electric Projects has been constructed in this Division. Accordingly the Catchment Area Treatment Plans has also been formulated and are being implemented in this Division. Comprehensive CAT Plan (CCP) for Satluj Basin has also been formulated by H. P. Forest Department through NERIL. The CCP of Satluj River basin covers an area of 20000 KM² upstream of Koldam and envisages an expenditure of Rs. 1440 crore on various treatment measures, to reduce the silt load in the streams catering the various projects and bring the ecology of the catchment on a sound footing..



The detail of Micro Watersheds which covers the tract of Anni Forest Division is tabulated in the Table No. **XI+2.7**.

Table No. XI+2.7

Name of Range	Sr.No.	Micro water shed numbers	Priority Class	Area in Ha	Remarks
Arsu	1	Sm2b	7	1964	
	2	Sp1a	6	2150	
	3	Sp1b	5	1818	
	4	Sp1c	8	1786	
	5	Sp2a	6	1912	
	6	Sp1d	10	2608	
	7	Sp2b	4	3452	Arsu and Sarahan Range
	8	Sm2d	4	2955	
	9	Sm2k	10	2540	
	10	Sm2j	6	2144	
	11	Sm2i	6	1900	
	12	Sm2g	5	1760	
	13	Sm2h	5	2684	
	14	Sm2e	5	2268	
	15	Sm2f	6	2180	
		Total		34121	

Chowai	1	Sk1n	5	2952	
	2	Sk1q	10	2700	
	3	Sk1e	6	1780	
	4	Sk1f	5	2800	
	5	Sk1h	6	2144	
	6	Sk1m	6	1990	
	7	Sk1c	5	2668	
	8	Sk1k	7	1804	
	9	Sk1p	6	2880	
	10	Sk1a	7	1504	
		Total		23222	
Nither	1	Sm2c	5	1628	Arsu&Nither Range
	2	Sm2a	5	2588	
	3	Sm1d	7	2100	
	4	Sm1c	8	968	
	5	Sm2e	5	2268	
	6	Sm1b	4	2900	
	7	Sm1a	8	1900	
		Total		14352	

(Source: - Comprehensive CAT Plan for Satluj Basin, NERIL)

XI+2.38 Eco-Tourism:

Tourism in State of Himachal Pradesh is a growing industry after hydro electric power project. Therefore, the question arises whether tourism will lead to disturbances in environmental equilibrium. In an article on Eco-tourism, Down to Earth, 31st July, 2002, a Mexican eco-tourism consultant is given with the credit for introducing the term “eco-tourism”. He has defined it is “traveling to relatively undisturbed or uncontaminated natural areas with the specific objective of studying, admiring and enjoying the scenery and its wild plants and Animals, as well as any existing cultural manifestations found in these areas”. The International Eco-tourism Society (IETS) considers eco-tourism to be responsible travel to natural areas which conserves the environment and improves the well being of local people. It demands ‘responsible’ travel so that the impact on ecology is minimized and the benefits of travel trade are shared, not just with tour operators, but with local communities an environment friendly smokeless industry for the many beautiful but destitute regions of the world.

Responsible eco-tourism includes programmes that minimize the negative aspect of conventional tourism on the environment and enhance the cultural integrity of local people.

The Govt. of Himachal Pradesh, Forest Department has notified the “H.P. Forest Department Revised Policy on Development of Eco-Tourism in Himachal Pradesh, 2005. Eco-tourism policy of Himachal Pradesh aims to bring the wilderness of Himalayas closer to the tourist visiting the state and at the same time attempts to put in place adequate safeguards and system leading to the preservation of these natural resources. The vision of the eco-tourism is to preserve and protect the forest, natural heritage, flora and fauna and attract discerning tourist and visitors to the state and to make Himachal Pradesh a leading eco-tourism destination in the country. The details objectives and strategies of the policy could be accessed from the website:- www.himachalecotourism.nic.in/trekking.html.

Eco-tourism interacts with environment in a two way process. The environmental resources provide a critical input for the production of tourism product and virtually the tourism development of an area is dependent on the availability of attractive natural or manmade resources. On the other hand, tourism produces a variety of unwanted by products that are disposed to the environment causing negative effects on the environment of the host area. Among the negative effects of tourism on environment are:-

- i) Disruption of breeding habits, killing of wild animals and change in extent and nature of vegetation cover through clearance to accommodate infrastructure.
- ii) Water pollution through discharge of sewage, air pollution and noise pollution due to vehicle and population.
- iii) Change in character of built area, changes to urban fabric and over load of infrastructure.
- iv) Increased interest in cultural resources, changes in cultural landscape and festivals, prostitution and crime rate increased.
- v) Problem of pollution and garbage disposal.

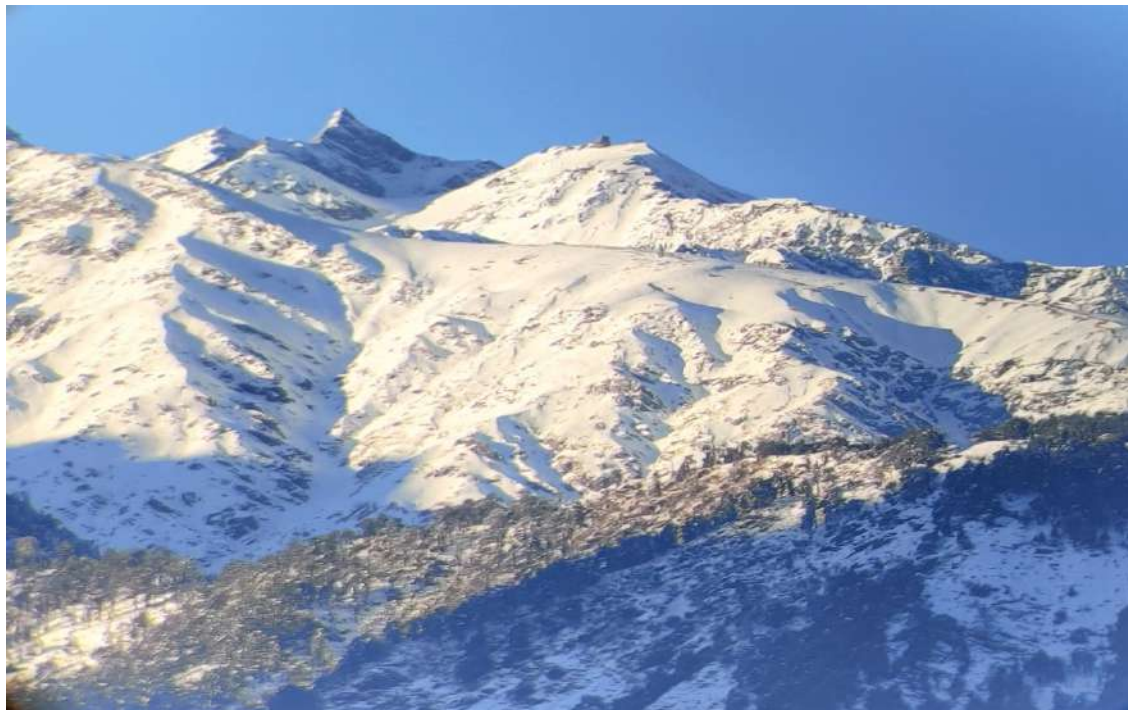
There is large scope in eco tourism in the tract of this Division. In Anni Forest Division the eco tourism activities are going on. Large number of tourist is visiting these places. Divisional Forest Officer must take preventive measures and the negative effect of tourism on environment under the provision of Indian Forest Act, 1927 and Environment Protection Act, 1986 and for the same purpose shall have to notify the rules under Section 32 of Indian Forest Act, 1927.

XI+2.38.1 Eco-Tourism Policy, 2017:

The Himachal Pradesh Government vide its notification No. FFE-B-C (15)-3/2005-III Dated 25-02-2017 has notified the “HP Forest Department Re-revised Eco-Tourism Policy-2017”. The vision of this policy is:

- to preserve and protect the natural (both flora and fauna) and cultural heritage of Himachal Pradesh,
- to provide opportunities to enhance the livelihood of the local people,
- to generate resources for sustainable development and
- to promote greater understanding and appreciation for this heritage through authentic Eco-Tourism initiatives.

XI+2.38.2 Shrikhand Mahadev Yatra



The hills and mountains have special significance and Mountains have traditionally been regarded as abodes of gods. Mountains area also held sacred due to their association with deities, mythology and legends. Sri Khand Mahadev is one such revered mountain peak in Himachal about which not much has been written. It is believed there are total seven Kailash mountains. The well known as Mansarovar Kailash in Tibet, Adi Kailash in Pithoragarh district of Uttarakhand, Amarnath Kailash in J&K, Raldang Kailash popularly known as Kinner Kailash in Anni district of Himachal Pradesh, Mani Mahesh Kailash in Chamba district of Himachal Pradesh, Sri Khand Kailash in Shimla/Kullu districts of Himachal Pradesh. Seventh one is believed to be Boorha Kailash and is yet to be located.

Shri Khand Kailash is situated at 18,500 feet above sea level. It is usually undertaken to coincide with the Ashada Purnima or, full moon day of June to July as per the Vikrami calendar.

It can be accessed from Jeori, Ghanvi & Phancha in Shimla District or Bathad, Gushani and Jaon in Kullu District. 'Shrikhand Mahadev Kailash Yatra' is a Pilgrimage trek in [Kullu, Himachal Pradesh, India](#). There are various spots that pilgrims take before reaching Jaon, some of them include (in decreasing order of their distance from the peak), [Shimla, Nirmand](#), Jaon. It's a 32 km (from one side) trek from base village Jaon to the Shrikhand top which is approximately 18,570 ft above the [sea level](#). From Jaon the journey begins, and after 3 km of walking reaches Singhaad, the first Base camp where [Langar](#) (free meal for the pilgrims) is available alongside some paid food services. After that there is a 12 km straight uphill stretch to Thaachru, also known as 'Dandi-Dhaar' (roughly translating to Stick-Height), because of the stretch being a very steep slope with an [elevation angle](#) of approximately 70 degrees. One gets to see lush green Deodar trees & Streams while enrooting towards Thaachru and after the tired trek of 15 km we must halt the first day Journey there as Tent & Meal services are available there. Thaachru is another base camp, surrounded by lush green Deodar trees and Streams, where meals and tents are available. The journey begins with a 3km uphill trek to Kali Ghati, which is supposed to be abode of the Goddess [Kali](#). The Shiva-Linga can be seen from this point, given the weather is clear. From Kali Ghati, there is a 1km downhill stretch towards Bheem Talai. Departing from Bheem Talai, there is a 3 km stretch to Kunsu Valley, a green valley with Himalayan flowers surrounding it. After another 3km stretch from here, there is the next base camp, Bheem Dawaar, having all the usual services. Just 2 km ahead is another base camp, [Parvati](#) Bagh (Parvati's garden), supposedly a garden planted by Hindu Goddess Parvati. The garden has flowers like Brahma Kamal, also known as [Saussurea obvallata](#), which supposedly Hindu deity [Shiva](#) used to plant an elephant's head on [Ganesha](#), the god of New Beginnings. 2 km from there, is the next spot *Nain Saravor* (meaning, *Eye's Lake*), and revered to be a holy lake, and numerous people reporting physical healing of old diseases, and impairments after dipping in the lake. After this, is the final stretch of approximately 3 km to the peak, through rocky terrains, to the peak, where the lingam is situated. The top alongside having [Shiva's](#) lingam also has a mountain for [Lord Kartikeya](#), behind the main Shiva Mountain.

XI+2.38.3 The Sereolsar Lake: -





The lake is situated about 3100 meters (10,171 ft.) above sea level and is surrounded by thick Oak forests. The Sereolsar Lake is accessible via Jalori pass and falls in Outer Seraj Valley of Anni Sub-Division, District Kullu. The Local inhabitants are associated the lake with Buddhi Nagin (Goddess of snakes and [ghee](#) and mother of all [nag deities](#)) and claim the lake's water possess medicinal properties. A small temple to Buddhi Nagin overlooks the lake from its North side.

Lots of tourists visit this place while crossing to Kullu valley from Jalori Pass. The H.P.State Forest Development Coroporation, Ltd. Rampur has also developed the site near Jalori Pass for the tourists for staying purposes and site seeing.

XI+ 2.38.4 Eco-Tourism in Baga Sarahan:



(Panoramic view of Baga Sarahan)



(Green Lush ground of Baga Sarahan)

It is situated about 2200-2300 meters above the main sea level. There is motorable road up to Sarahan. H.P. Forest Department is constructing an Inspection Hut near HPPWD Rest House. There is an open wide lush green ground with beautiful conifers Forests around the ground. A beautiful serpentine like water channel also flows in the lush green ground. There is also beautiful temple of 'Shana Hrishi' in the middle of the village.

There is proposal to develop this place as per new H.P. Forest Eco-Tourism Policy, 2017. The trackers can also cross to Kullu, Mandi via Bashleo Pass to Bathad and Banjar and finally to Kullu-Manali.

XI+2.38.5 Remedial Measures:

Divisional Forest Officer must take the following remedial / preventive measures.

- i) To avoid too much habitation and consequential effects of it will have a warming effect and occasion a temperature rise in alpine meadows. This will have direct effect on the glacier and flora etc. Let man made activity not disturb this natural Himalayan phenomenon especially at Shri Khand Kailash Yatra, Distt. Kullu.
- ii) The Eco-tourism society will be registered by the Forest Department and temporary tea shops will be managed, monitored and controlled by them in the track to Shri Khand Mahadev. Adequate arrangement shall be made to receive the packaging material which is non-biodegradable and prevent the littering of it on the mountains side or the streams.
- iii) In every kilometer of the track to the Shri Khand Mahadev route shall have containers bins or receptacles to receive these throw away wastes of packages. Each of the receptacles or bins shall be marked in Hindi and English to Signify bio-gradable & non-bio-gradable etc. However, the administration of Distt. Kullu has also placed dustbins in different sites in the track.
- iv) The ultimate lodging facility on this route shall be provided by the Eco-tourism society under the administrative control of the Forest Department. The priority in this region and

the perspective in reference to the environment of the area requires preventing the cutting of forest wood for fire and other purposes. Energy saving devices must be endowed ecologically.

- v) No permanent structure will be developed as hotels or resorts on the meadows and pasture lands. This area should not be encroached upon and to take preventive measures for not damaging the forest, environment and ecology.
- vi) The use of plastic packages or bottles or non degradable materials should be banned from entering the hills or discouraging is much better than collecting the garbage under the provision of the Indian Forest Act, 1927 and Environment Protection Act, 1986 or to discourage the entry of plastics and non bio-degradable materials into the hills under the H.P. Non-Biodegradable Garbage (Control) Act, 1995.
- vii) No worships materials will be thrown away at the sweet wills of the pilgrims and it should be kept in proper place i.e. dust bin be kept in proper place and managed by local administration or the Eco-tourism society so that these materials may not be thrown all over the hill side or wet land or Glacier or stream etc.
- viii) Tourist and trekking pilgrimage routes i.e. Singhgad, Inspection Hut to Shri Khand Kailash should be maintained properly and also proper camping sites must be identified & maintained or developed with prior approval of the Central Govt. under Section 2 of the Forest (Conservation) Act, 1980.
- ix) No commercial activities will be allowed in forest areas especially in meadows and alpine pasture and hoardings/rock painting etc.
- x) The pilgrims should be advised not to pluck the Braham Kamal from the route of Shri Khand Mahadev, particularly in Parvati Bag.
- x) In the light of remedial measures, Divisional Forest Officer, Anni may take initiative step for formation of eco-tourism society at village level and declaration of safe eco-trail from road side to ultimate destination i.e. Shri Khand Mahadev.

Mountains and fresh water, water streams are to be kept free of garbage, filth and open defecation. Tea shops, lungar and worships place managed by local people are to be regulated to avoid any stampede and environmental hazard by local administration with the help of Eco-tourism society. For strict monitoring and protecting the environment, the State administration as a trustee is under a legal duty to protect the natural resources. These resources meant for public use cannot be converted unto private ownership.

XI+2.39 Bio diversity Conservation and Development:

The Biological Diversity Act, 2002 provides for preservation of biological diversity in India, and also provides mechanism for equitable sharing of benefits arising out of the use of traditional biological resources and knowledge. The Act was enacted to meet the obligations under Convention on Biological Diversity (CBD), to which India is a party. Forests provide habitat for many plant and faunal species. The contribution of individual species to the overall diversity within a community or ecosystem varies to a great extent. The coexistence of organisms that differ widely from each other contributes more to overall diversity than the co-existence of very similar species. Functional diversity is considered to be one of the main factors determining the long-term stability of an ecosystem and its ability to recover from major disturbances. Assessment of status of plant and faunal species and their periodic monitoring can be helpful in formulating strategies

for conservation, maintenance and enhancement of overall biodiversity through sustainable management and use practices especially the lower forms of life (algae, fungi, lichens, epiphytes, parasites, etc.) with the support from State Biodiversity Board. All these assessments will help in updating and enriching the People's Biodiversity Registers (PBRs) as provided in Biodiversity Act, 2002. Biodiversity Assessment Study in representative areas of Thickly wooded and sparsely wooded areas in the division conducted and annexed as Annexure XI+2.41.

XI+2.40 Gaushala or Gausadan:

Gaushala are meant for the care of stray, abandoned cows, bulls, retired oxen, and orphaned Calves. Cattle's are provided with hay, flour, fresh grass, clean water, medical attention and a place where they can recuperate from injuries and stay peacefully.

Gaushala protect the cows and improve their feeding and living standards and keep them in clean atmosphere. At the same time Gaushala aim to setup a urine therapy research center and practicing center for critical ailments. It also aims to spread the awareness about the importance of cow and rich properties of cow. It also underscores the importance of spiritualism in human life and to create a complex where people can do research, meditate, enjoy a multimedia experience and learn about the facts of happy and prosperous life in a pristine historic and environment. This tract is facing problem of stay cattle all along national high way, link road and other public places attracting the attention of conservationists for some time past.

The solution of this problem could only be overcome by creation of Gaushalas at different locations which are having sufficient grass lands, Gausadan and water resources. Such sites which are identified for creation of Gaushalas are Averi, Nirmand, Moin, Shush, Ranabag, Showad, Kandugad etc. which will be taken care by Animal Husbandry Department or Gram Panchayat. This will be very helpful in better understanding of problem of stray Animals and ultimately help in mitigating the problem of grazing in plantation area i.e. along the national high ways, link road and other nearby forest areas. Therefore, need the Govt. Policy for addressing the problem of stray Animals and livelihood issue of the poor people. Not only this poor people can be engaged for collection of grasses from forest/plantation areas under MGNREGA Scheme for encouragement of stall feeding. This will help to reduce the biotic pressure from forest/plantation and fire during fire season.

Therefore, Divisional Forest Officer, Anni must ensure that Gaushala or Gau-Sadan shall be setup or established with prior permission of the Central Govt. under Section 2 of Forest (Conservation) Act, 1980.

XI+2.41 Carbon Stock, Carbon Sequestration and Mitigation: -

Forests and their role in the carbon cycle are affected by changing climatic conditions. Evolutions in rainfall and temperature can have either damaging or beneficial impacts on forest health and productivity, which are very complex to predict. Depending on circumstances, climate change will either reduce or increase carbon sequestration into forests, which causes uncertainty about the extent to which the world's forests will be able to contribute to climate change mitigation in the long term. Forest management activities have the potential to influence carbon sequestration by stimulating certain processes and mitigating impacts of negative factors.

Depending on their characteristics and local circumstances, forests can play different roles in the carbon cycle, from net emitters to net sinks of carbon. Forests sequester carbon by capturing carbon dioxide from the atmosphere and transforming it into biomass through photosynthesis. Sequestered carbon is then accumulated in the form of biomass, deadwood, and litter and in forest

soils. Release of carbon from forest ecosystems results from natural processes (respiration and oxidation) as well as deliberate or unintended results of human activities (i.e. harvesting, fires, deforestation).

The contribution of forests to carbon cycles has to be evaluated taking also into account the use of harvested wood, e.g. wood products storing carbon for a certain period of time, or energy generation releasing carbon in the atmosphere.

In cases where the net balance of carbon emissions by forests is negative, i.e. carbon sequestration prevails; forests contribute to mitigating carbon emissions by acting as both a carbon reservoir and a tool to sequester additional carbon. In cases when the net balance of carbon emissions is positive, forests contribute to enhancing greenhouse effect and climate change.

The Himachal State is a mountainous state located in Western Himalayan Range which present wide range of land use systems owing to the diverse physiographic and demographic mosaic. It extends over geographical area of 55673 Km² which is 1.69 % of country area. The Anni Forest Division is falls in District Kullu and faces the Shimla hills and reaches out to touch the Sutlej River. It can be reached either from **Kullu** or Shimla. The Jalori (3,135m) and the Bashleo (3,250m) passes stand as markers between the Inner and Outer Seraj

The predominant land use system comprises of forest and agricultural. Forest comprises of 38.30 % of total land mass. This includes plantation as well as trees outside forest e. g. trees on agriculture land. The forest of Himachal Pradesh is reach in vascular flora, which forms the conspicuous vegetation cover. The Anni Forest Division falls in the District Kullu of Himachal Pradesh and consists of Deodar, Kail, Fir and Spruce as major species. The detail description of about the flora is given in the chapter - II of part one of the current plan. The Agricultural landscapes are characterized by undulating topographic where in a terraced field are made on medium to steep slopes. The agricultural fields of this division generally have trees on boundaries for interspaced trees are also present natural and planted trees like Popular & Chuli, etc. The farmers generally plant horticultural crops but at places forest species are also preferred. The climate change now is a common phenomenon and the time is not about trying to find the conclusive evidence but is for action. The need is to give up priority to mitigate climate change, through judicious use of natural resources and implement programmes for enhancement of carbon stock. One of the strategies is to look into the present land use system. The need is to increase efforts in research on the function of forestry and the agro forestry system as carbon sinks. Among the green houses, CO₂ is the most important component, accounting for 60% of global warming. Although the forests are the main land based CO₂ sinks, yet the forest ecosystems play a crucial role in general and global terrestrial carbon cycles because they store large quantities of carbon in vegetation, detritus and soil and exchange large amount of carbon with the atmosphere through photosynthesis and respiration. However, it is difficult to determine how and to what extend forest carbon sinks and reservoirs may be managed to mitigate CO₂. Therefore, understanding the determinants of forest carbon storage and allocation in different ecosystems component is important for predicting the response of carbon balance to climate change and forest management. There is a rapid increase in interest in agro forestry and plantation as a land use practice in this division. Plantation generally comprises of monoculture i. e. single tree species. The agro forestry system involved in greater diversity and complexity compared to plantation, have become a research interest which is posing fundamental question like how much carbon is sequestered in such land use system. The agro forestry is an attractive option for carbon mitigation as it sequesters carbon in vegetation and soil depending on the pre-conversion vegetation and soil carbon.

The agricultural lands are believed to be a major potential sink and could absorb large quantity of carbon if trees are introduce to these systems and judiciously managed together with crops. The

growth and productivity of plants including trees are directly related to the nutrients present in soil system as well as their uptake by the plant system. The Land Use, Land Use Change and Forestry (LULUCF), an approach that became popular in the context of Kyoto Protocol to the United Nations Framework Convention on Climate Change (UNFCCC), allows the use of carbon sequestration through forest (Polyculture and Monoculture) and agro forestry. Carbon sequestration potential depends upon the biological productivity, which in turn depends upon interaction between species, climate, topographic, management practices imposed. Thus carbon density and sequestration potential varies from place to place which need to be worked out on region to region species to species basis.

XI+2.42 Regeneration Assessment Survey:

Regeneration assessment in the forests gives a clear/actual picture of forest stocking, which plays a vital role in the management of forests. It is suggested that regeneration assessment survey of PB-I forests should be regularly carried out every year. This can be great help and should be kept in view while preparing the APO for next year. The regeneration should keep pace with the fellings/removals. And in case of variations corrective measures should be taken by resorting to artificial regeneration/closure, so that the area is restocked in prescribed time.

FOREST AND CLIMATE CHANGE

XI-3.1 Introduction:

Climate change is a major global environmental and developmental problem. Though all the possible consequences of climate change are yet to be understood, it is now established that adverse impacts are likely from an increased frequency of extreme weather, floods and droughts. Impacts of climate change are also likely to be visible particularly with the poor, women, the aged and the very young are relatively more vulnerable due to their greater dependence on climate-sensitive sectors such as agriculture, fisheries and forestry for their livelihoods or their limited adaptive capacity.

A number of new concepts have emerged in forestry sector at the international level over the last few decades. Notable among these is REDD+, the institutional and governance framework for reducing emissions from deforestation and forest degradation, and for promoting conservation, sustainable forest management and forest carbon stock enhancement. This concept is issue of concern due to over increasing of climate change and realization that it cannot be addressed without focusing on the forestry sector both as major source and sink of greenhouse gases. With this two additional concept have also gained currency in recent decades viz. eco system approach, developed by Convention on Biological Diversity and a landscape approach which focuses on management of forests as an integral component of large dynamic landscapes.

XI-3.1.1 Climate Change Impact, adaptation and mitigation:

Forests and climate operate at varying spatiotemporal scale. Role of Forests influencing the climate and vice versa is becoming a matter of concern for understanding climate change. Therefore, Forests have emerged as global common concern in recent years for defining its crucial role in mitigation and adaptation strategy for climate change. Climate change invariably effect the availability of land resources to support different types of forest. Thus, Forests are exposed to various levels of vulnerability under the influence of climate change. Understanding vulnerability of forest eco system and probable impact is crucial for the effective management of planning of forest to address adaption and mitigation option. Therefore, there is need for consideration of issues relating to impact, adaptation and mitigation in working plan.

The current working plan aims at improving the forests and its productivity through effective intervention and planning and thus increasing the carbon sequestration capability of the forests which reduces the atmospheric carbon dioxide concentration. Deforstaiton and degradation related issues of the forest are addressed to ensure efforts and mechAnnism to measure forest carbon. The climate change has undoubtedly emerged as an issue of global concern. Climate change has a potential to completely and adversely affect the way of human life. The terms global warming and climate change are often use interchangeably, but there is a difference. “Global warming’ is the gradual increase of the earth’s surface temperature due to greenhouse gases in the atmosphere, whereas the climate change is a broader term. Climate change phenomenon is more complex and the result of activities that alters the composition of atmosphere due to undesirable and unwanted over exploitation of our natural resources. As the forest generally operate on the large temporal scales, it becomes necessary to monitor the changes occurring within the forest at various levels preferably for longer duration. Climate change impacts are generally assessed through measuring changing in other associated attributes of the forest which can be a consequence of direct or indirect impacts. The current working plan ensure monitoring of these attributes in the form of species range shifts, changing biodiversity, extension of species, physicilological changes in plant life cycle, forest growth pattern of species changing boundaries of

eco system, changes in other factors which can stress forest eco systems. The evidences which can be linked to climate change such as increased in the frequency and severity of forest fire, changes water regimes and expanding forest insect infestation etc. are also to be monitor through the working plan.

The information compiled in the current working plan has an ample scope for the Divisional Forest Officer to have a quick inside into the multitude of the conservation aspects. This include information related to floral and faunal diversity, status of threaded category of flora and fauna, health of the forests from its canopy to soil, productivity of the forests, climate change impact upon forests, type and extent of social pressure that drives forest degradation (Forest resource dependence) or its conservation (Like sacred grooves) and other issues of conservations. This current working plan focus more toward the conservation as compared to the earlier approach of extraction for meeting the commercial requirements of the forest produce. Further the focus is also now for the extraction of NTFP instead of the timber. Intentions are more for utilizing the NTFP as a source of revenue and livelihood support to forest dependent communities of the locality without compromising with the forest conservation. More stress is towards the improvement of degraded forest land, gap filling of open space to improve the diversity and density, actions for enhancing the productivity for the forest and adoption of silviculture practices for cleaning, thinning and improving regeneration of the forests.

The current working plan envisages for sustainable management of forest, conservation of the forest together with the improvement its health and productivity. It also ensures to protect the right of the people for regulated extraction of forest products.

XI+3.1.2 Issues and Challenges:

The Himalayan ecosystem is particularly at risk with the rise in global temperatures. The biodiversity which resides in the higher altitudes will have less and less place to occupy and will be at increased risk of extinction. The increase in global temperatures will cause an increased occurrence of GLOFs (glacial lake outburst floods) and will affect the size of the glacial lakes. The breakage of such lakes can be extremely devastating to human habitations, among others. It can be stated that the precipitation will be with increased intensity and will become more erratic. This will make the fragile ecosystems susceptible to damage by cloudbursts, increased soil erosion, etc. The overall pattern of rainfall is expected to be heavy rainfall followed by long period of droughts. This will reduce the overall availability of water in the hills. The alpine meadows have high soil organic content and are very good at sequestering carbon. They are also extremely rich in biodiversity. The increase in global temperatures threatens the existence of alpine meadows and makes them vulnerable to extinction. There will be a gradual shift of plant species towards higher altitudes. This will force local communities to shift to newer agricultural and fodder species.

The whole world is vulnerable to climate change which has emerged as a major threat to the eco system. The Himalayan regions are most vulnerable, to the climate change. The forests of the tract have significant economic and ecological value as a provider of eco system services and also supporting the livelihood of many people. The major issues like deforestation, landslides, land degradation, desertification and Glacier lake outburst floods (GLOF) are some of the common but critical environmental issues in regions. The major challenges faced by the environment are the escalation of issues through atmospheric as well as man-interferences. The conservations, sustenance of these ecologically fragile region is a biggest challenge being faced in this area.

Most of the people of this Division particularly in the rural area are dependent directly or indirectly on forest for their livelihood and utilized and significant quantity of forest

produce as well as services like NTFP, Eco Tourism, Fuel, fodder and Timber etc. The immediate repercussions of climate change on the forest are:-

- ❖ Visible in the form of shifting of tree line to higher altitudes.
- ❖ The situation is also visible and more alarming that temperature is likely to be increased by three degree and precipitation will decrease by 20 percent. In that situation the effect is more visible and alarming also.
- ❖ Many of the floral and faunal species are facing the problem of extinction or declining because of rising temperature which indirectly is affecting health, well being and livelihood of the people who rely on such resources.
- ❖ Beside the biodiversity is also affected adversely.
- ❖ The surfaced temperature is also increasing.
- ❖ The trend of monsoon rainfall has become erratic and there are extreme weather conditions.
- ❖ The higher peaks of the area of this Division possess largest reserve snow and ice and major water fall for perennial rivers, streams/khad. In the recent years it has been observed that there is recession of glaciers resulting into scarcity of water sources.
- ❖ Water Resources
It has been observed that climate change will affect the water balance, run off and recharge characteristics of the river systems. The water volumes stored in glaciers and snow covers are very likely to decline affecting a river flows during summer and autumn. It is also anticipated that resistance of many eco-systems is likely to exceed by an unprecedented combination of climate change and associated climate change drivers. One of the negative consequences of the rising temperature will be the reduction in solid precipitation, depletion in snow cover and shrinking the size of glaciers. In the long run this will influence very seriously the discharge of rivers when water will be required the most in summer months. The decline in stream flow will trigger multiple impacts, affecting irrigation, agriculture, drinking water and energy sectors the most.

XI+3.1.3 Biodiversity Conservation and Climate Change:

Overlapping international negotiations at the UNFCCC on REDD+ was the growth of a body of research and consensus on the importance of a broader set of ecosystem services. The Millennium Ecosystem Assessment (MEA) in the early 2000s popularized the concept of ecosystem services in four broad categories:

- Provision of food and water production.
- Regulating, such as climate change mitigation.
- Cultural, such as recreational and spiritual benefits from natural sites.
- Supporting, such as pollination and nutrient cycles.

All four services derive from native biological diversity, which is often threatened because of proliferating invasive alien species. Biodiversity and ecosystem services are interrelated. Modern research on ecosystem services supports the contention that climate change is triggered as we lose native biological diversity. This can further be elaborated as under :-

- i. Native vegetation has greater capacity to provide ecosystem services under changing environmental conditions. Three important indicators of a natural forest are that it exerts influence on the local climate, maintains the water regime, and shelters wildlife and produces wood. However, invasive alien species can adversely affect this “naturalness.” The introduction of so many exotic species (e.g., Lantana, Parthenium, Wattles, Eucalyptus, and numerous others) in Himalayan/in the tract of this Division and other forests, including protected areas,

are diminishing the capacity of natural ecosystems. Conversely, the diversity of indigenous species can decrease the probability of invasions of non-native species, many of which have had substantial economic, conservation, and societal consequences.

- ii. Biological insurance emphasizes rare species conservation. The extinction of native species in temperate ecosystems can cause a cascade of other extinctions, accelerating the rate of community change.
- iii. Biodiverse systems, on average, store more carbon and do so more reliably.
- iv. Biodiversity is multidimensional as it supports livelihoods, spiritual wellbeing, climate regulation, and carbon sequestration, in a natural ecosystem.
- v. Thus, more ecosystem functions and services need more local species. If the indigenous biodiversity is compromised, ecosystems collapse. There are many examples of industrial waste killing wetlands and rivers, and of fumes in the atmosphere killing plants and Animals and resulting in air pollution.

The forests in Himachal Pradesh are highly vulnerable and the climate change will have adverse impact on forest biodiversity, forest regeneration and production. Forest type shifts are expected to occur in more than 80% of forest grids and the vulnerability of higher altitude forests is relatively more. It is believed that incidents of forest fires will increase with the rising temperature. The other impact that is expected is the initial increase in forest productivity. The vegetation pattern in the State of HP is closely associated with climate as plant linkage communities with climatic regimes. It is apprehended that climate change will bring about noticeable change in the biodiversity, increase in temperature, changes in vegetation, rapid deforestation and scarcity of water, coupled with habitat destruction and corridor fragmentation may lead to a great threat to the existence of both flora and fauna. The alpine ecology nurture very important natural resources and influence the geo-hydrological cycle considerably. Alpine area in the State is particularly vulnerable as many species start their growth with the supply of snow melt. Reduction in snow fall will disturb the growth cycle of such species.

XI+3.1.4 Guidelines for integrating Biodiversity Conservation:

The following guidelines are suggested for integrating Biodiversity conservations

- **Watershed catchment protection and improvement:** To maintain and improve forest health for its climate mitigation and adaptation benefits, use of Joint Forest Management to engage major stakeholders. This can be done through a partnership between the government and project representatives and villagers through a legally recognized committee such as Joint Forest Management Committees (JFMCs).
- **Loss of biodiversity:** By and large, anthropogenic influences have been a major cause of biological diversity loss. For example, in the Himalayan state of Himachal Pradesh, local biodiversity is impacted due to an exponential increase in urbanization and Agriculture, and the construction of roads to open up the remote areas. In addition, forest fires and climate changes can adversely affect biological diversity. Identification of these factors that can add to biodiversity loss Emerging concepts and their operationalization can help plan for the reversal of such processes.
- **REDD+ in aid to biodiversity conservation:** REDD+ can help implement safeguards, which could include planting of only local species, avoiding monocultures, forbidding the felling of old growth forests, and barring plantations of exotics and uprooting of invasive alien species. The

Government of Himachal Pradesh spends a sizeable amount on Lantana (an invasive alien species) removal. Similarly, other alien species such as Eucalyptus, Poplars, Jacaranda, Leucinia, Robinia, etc. can also be removed and replaced by native species which are more beneficial to the local ecology.

➤ **Invasive alien species:** REDD+, as a system, has to be clear on invasive alien species, which include microbes, plants, and Animals, all non-native to an ecosystem and which cause economic or environmental harm, and/or adversely affect the ecosystem and human health. “In particular, they cause decline or elimination of native species – through competition, predation, or transmission of pathogens and the disruption of local ecosystems and ecosystem functions”. Invasive alien species, introduced and/ or spread outside their natural habitats, have affected native biodiversity in almost every type of ecosystem on earth and are one of the greatest threats to biodiversity.

➤ **Ecosystem approach to forest management (EAFM):** Monocultures in forestry are now seen as very different from biodiverse forest areas. They are interdependent ecosystem processes, which need a multitude of floral and faunal species. A forest spread over a larger landscape with its intact biological diversity is expected to mitigate/ minimize the risks of climate change by enhancing resilience of the forest ecosystems. EAFM is expected to maximize and sustain impact by

- i. Developing sustainable institutional frameworks and capacity for its stated objectives at the regional and community levels.
- ii. Creating an appropriate policy and legal framework, this remedies the numerous policy failures that have led to unsustainable and inequitable exploitation of the forest resource.
- iii. Improving the sustainable financial basis for the state through exploring the potential of increased use of proven technologies for low-carbon or carbon-neutral energy. EAFM seeks use of “natural resources, while maintaining the biological richness and ecological processes necessary to sustain the composition, structure and function of the habitats or ecosystems concerned”. Important within this process is setting explicit goals and practices that anticipate the needs of the future, regularly updated in the light of monitoring and research activities.
- iv. EAFM requires new information – different from the management practices to enhance timber production. The shift toward ecosystem services will need to have more nuanced information about interrelations of various indigenous floral and faunal components of an ecosystem. In addition, EAFM will have to ensure the role of civil society, including local user groups, women groups, and nongovernmental organizations for the sustainability of efforts and results. There will be options to review and change EAFM during its implementation to ensure its sustainability. An early impact assessment can further ensure this aspect.

➤ **Protected Area management** The protected area management in this area can be prioritized to adopt EAFM and the related REDD+ system. For example, the Great Himalayan National Park in the Kullu district of Himachal Pradesh has recently (2014) been designated as a World Heritage Site for its biodiversity values. The ecosystems being preserved in the vast park landscape are contributing to water provision, hydro-electricity, community based ecotourism, and many religious-cultural values. The park acts as reservoir of local biological values,

and is well protected under the Indian Wildlife (Protection) Act of 1972 against any developmental activity

XI+3.1.5 The scenario/impacts on mountain eco-system in Himachal Pradesh:

Certain biomes such as the evergreen warm mixed forests likely to show marked expansion. Tundra and wooded tundra will probably shrink under all possible scenarios. Species composition in the new biomes will be different from the existing ones. Increased occurrence of fire, erratic rainfall and anthropogenic pressure may inhibit the ability of some species to migrate and establish in new locations. Decline in economically and socially important species such as deodar, cedar and oak due to increased climatic and biotic interactions. Increase in Blue and Chir Pine species due to elimination of competing species. In view of the changes observed and projected in Kullu district it would be important to undertake studies for impact assessment and developing adaptation models because the changes such as loss of biodiversity will be irreversible and there is long gestation period in developing and implementation of adaption practices. Moreover the forest sector has large ecological, economic and social implications.

However, its success depends on the extent of grazing pressure since large Animal populations may graze and trample seedlings and prevent them from surviving. Silver Fir, being slow-growing and highly sensitive to disturbance, may not keep pace with climate change. Increased variability of rainfall could jeopardize its ability to colonize new areas particularly when faced with competition from more robust species such as *Quercus semecarpifolia* and Blue Pine. In particular, it may not survive well if precipitation falls as it is very sensitive to drought. A warming of the higher mountains may result in a shift in human habitation and Animals to previously sparsely populated zones. In such circumstances Silver Fir may not be able to establish itself since it is also highly sensitive to grazing pressure. Grassy meadows could therefore develop. In addition, the low seed production capacity and slow growth rate of Silver Fir could make it less successful in tracking climate change and establishing in new areas. Consequently, the mix of vegetation could be different from the present with the incidence of Silver Fir being much reduced. Instead there might be a greater proportion of *Quercus semecarpifolia*, Blue Pine and grassland or meadows. The area under alpine meadows may therefore not contract as radically as forecast by the model. The area under Temperate Deciduous Forests and Cool Conifer Forests is predicted to decrease overtime. The first half of the next century may not show any appreciable change. However, the habitat may become increasingly unsuitable for these groups of plants as we progress through the next century. According to the forecast, there could be shrinkage of roughly 8 per cent in Temperate Deciduous Forests and 25 per cent in Cool Conifer Forests by the year 2080. Accompanying shrinkage in the area is north – east wards change in location of these biomes. The loss of Temperate Deciduous Forests will occur mainly in the lower limits of their range where they will be replaced by Evergreen Warm Mixed Forests. Some north-eastwards movement of this biome is also forecast. As Chir Pine (*Pinus roxburghii*) is a highly successful species it is likely to emerge as the dominant species as Temperate Deciduous Forests are replaced with Evergreen Warm Mixed Forests. Most of its competitors cannot survive natural calamities such as adapting to Climate Change in a Forest-based land use system, drought and fire. The migration and success of broad-leaved trees could also be impeded by severe biotic pressure in the form of grazing, collection of fuelwood and the spread of agriculture. The result could be a squeeze on fuel and fodder availability as the landscape becomes dominated by the Chir Pine. Areas presently covered with

Cool Conifer may change to Temperate Deciduous as the biomes move upwards into the inner Himalayas. The more adaptable species dominating this biome will probably be able to move to newer locations. Owing to their extremely wide ranges, *Quercus incana* and Blue Pine will, at least in theory, be able to move to new locations. The picture may be somewhat different in reality. The spread of *Quercus incana* may be checked by fire (it is likely that the incidence of fires will increase) because the seedlings are particularly sensitive. Large human and animal populations in this zone will also exert pressures on *Quercus incana* which is an important source of fuel and fodder. Repeated lopping reduces vigour and seed production in *Quercus incana*. The relative abundance of *Quercus incana* in Evergreen Warm Mixed and Temperate Deciduous forests is already being affected by excessive lopping and large-scale felling for marketing of fuelwood. It has been observed that marked reduction of new seedlings of this oak due to biotic interference may eventually lead to its disappearance. The effects of removing interference from fire, animals and humans through protection shows how the balance between the Chir Pine (*Pinus roxburghii*) and *Quercus incana* changes. The latter rapidly dominates and leaves only a few Chir Pine trees in between as pest outbreaks are likely to become more frequent and new types of pests occur. It is also possible that *Quercus incana* acorns become more prone to attack by *Calandra glandium* beetles further reducing the chances of success. Increases in rainfall could threaten the ability of Deodar to establish on new territory because of its extreme sensitivity to high soil moisture.

A current pattern of distribution of this tree shows that it is conspicuously absent from gentle slopes because of their poor drainage. A reduction in rainfall may not be totally conducive either because it is known that unusual drought conditions can trigger outbreaks of the defoliator *Ectropis deodarae*. Any increase in the occurrence of fire could also limit the spread of Deodar Cedar because of the susceptibility of young stands to it. As Cool Conifer Forests are replaced by Temperate Deciduous Forests the more environmentally demanding *Quercus dilatata* might give way to the adaptable *Quercus incana* at the interface between the two biomes. However, as mentioned above, the establishment of *Quercus incana* may not be without its problems because of current use practices. Some areas may change to Cool Mixed Forests as the area under the latter biome expands over the next century. In this case, too, *Quercus dilatata* may not be able to colonize new areas successfully because fires and greater fluctuations in rainfall could make it succumb to more hardy species.

In general, it is likely that the species composition in new biomes which arise as a consequence of climate change could be significantly different than at present. A greater number of fire outbreaks, erratic rainfall and the pressure from human activities may inhibit the ability of some species to migrate to new locations. In addition, physical barriers such as crop land and topographical features are also likely to hamper the movement of certain species. Some economically and socially important species such as Deodar and the oaks will almost certainly decline due to the interaction of climatic and biotic factors. Others such as the Blue Pine and Chir Pine may increase in numbers as various changes eliminate competing species changes according to intensity of climate change. The change in the area under different biomes and their future location could be affected by the intensity of climate change in the future. The latter factor depends on the sensitivity of the climate system to greenhouse gas concentrations. In order to accommodate such uncertainty in the projections, it is therefore, important to consider a range of possible outcomes, low, moderate and high climate change. Some biomes appear to be more sensitive to such variation in the intensity of climate change. For example, the area under Evergreen Warm Mixed Forests, Cool

Mixed Forests and Xerophytic Woods will probably change very little by 2050 if climate change is low. However, the picture changes significantly when a moderate degree of climate change is introduced into the model. Evergreen Warm Mixed Forests show a marked increase (roughly 12 per cent). Under a high degree of climate change evergreen warm Mixed Forests could spread, taking up 30 per cent more ground area.

Rapid expansion is possible only for those trees which can survive competition from other trees within that biome and also outside pressure such as increased variation in rainfall, possible increases in fire and pressure from human and Animal activities. The Chir Pine (*Pinus roxburghii*) being highly resistant to drought, fire, grazing and disease is likely to out-compete other trees which are presently found in association with it. Temperate Deciduous Forests are likely to be severely hit only if there is a high degree of climate change. Whereas this biome shows a reduction of only four per cent under low climate change the decrease in area will be eight per cent if the climatic change is high. The area under Tundra, which seems particularly sensitive to climate change, is predicted to change dramatically under all three scenarios. Even low to moderate climate change will see the area of Tundra shrinking by 44-51 per cent. If there is a high degree of climate change then only just over a quarter of the area under this biome will remain. This implies that the grass lands and alpine meadows in Himachal Pradesh are likely to be vastly diminished in the future. Tundra will be replaced mainly by Taiga and this corresponds to inner Himalayan mountains which are at an altitude of roughly 3300-3500 m.

XI+3.1.6 **Role of forests in climate change:**

The Forests are important carbon pools which continuously exchange CO₂ with the atmosphere, due to both natural processes and human action. Understanding forests' participation in the greenhouse effect requires a better understanding of the carbon cycle at the forest level. Organic matter contains carbon susceptible to be oxidized and returned to the atmosphere in the form of CO₂. Carbon is found in several pools in the forest, the vegetation, living plant biomass consisting of wood and non-wood materials. Although the exposed part of the plant is the most visible, the below-ground biomass (the root system) must also be considered. The amount of carbon in the biomass varies from between 35 to 65 percent of the dry weight (50 percent is often taken as a default value), dead wood and litter: dead plant biomass, made up of plant debris. Litter in particular is an important source of nutrients for plant growth, soil organic matter, the humus. Humus originates from litter decomposition. Organic soil carbon represents an extremely important pool.

At the global level, 19 percent of the carbon in the earth's biosphere is stored in plants, and 81 percent in the soil. In all forests, tropical, temperate and boreal together, approximately 31 percent of the carbon is stored in the biomass and 69 percent in the soil. In tropical forests, approximately 50 percent of the carbon is stored in the biomass and 50 percent in the soil.

Wood products derived from harvested timber are also significant carbon pools. Their longevity depends upon their use: lifetimes may range from less than one year for fuelwood, to several decades or centuries for lumber.

The participation of forests in climate change is thus three-fold:

- They are carbon pools.

- They become sources of CO₂ when they burn, or, in general, when they are disturbed by natural or human action
- They are CO₂ sinks when they grow biomass or extend their area.

The earth's biosphere constitutes a carbon sink that absorbs approximately 2.3 GtC annually. This represents nearly 30 percent of all fossil fuel emissions (totaling from 6.3 to 6.5 GtC/year) and is comparable to the CO₂ emissions resulting from deforestation (1.6 and 2 GtC/year).

Current scientific evidence suggests that the scientific managed forests (of the temperate and boreal zone) sequester carbon at rates of up to 6 ton ha. These results show that the old growth forests are in equilibrium with a net carbon balance. On the other hand infrequent disturbances (fires, pest outbreaks, storms.) are triggering a sporadic, but massive return of carbon to the atmosphere. A soil specialist has emphasized that there is a potential for reversing some of these processes and sequestering carbon in soils in terrestrial ecosystems. The magnitude of the potential is estimated to be up to 50 to 75 percent of the historic carbon loss. Theoretically, the annual increase in atmospheric CO₂ can be nullified by restoration of 2 billion ha of degraded lands, which would increase their average carbon content by 1.5 ton / ha in soil and vegetation.

The carbon cycle (photosynthesis, plant respiration and the degradation of organic matter) in a given forest is influenced by climatic conditions and atmospheric concentrations of CO₂. The distinction between natural and human factors influencing plant growth is thus sometimes very difficult to make.

As per research increase of CO₂ in the atmosphere has a "fertilizing effect" on photosynthesis and thus, plant growth. There are varying estimates of this effect: + 33 percent, + 25 percent, and + 60 percent for trees, + 14% for pastures and crops. This explains present regional tendencies of enhanced forest growth and causes an increase in carbon absorption by plants. This also influences the potential size of the forests carbon pool.

There are still questions regarding the long-term future of the biospheric carbon pool. Several bio-climatic models indicate that the ecosystems' absorption capacity is approaching its upper limit and should diminish in the future, possibly even reversing direction within 50 to 150 years, with forests becoming a net source of CO₂. Indeed, global warming could cause an increase in heterotrophic respiration and the decomposition of organic matter, and a simultaneous decrease of the sink effectiveness, thereby transforming the forestry ecosystems into a net source of CO₂.

The capacity of the vegetation to adapt to an increase in temperature is also largely unknown. The recent research shows that results from long-term soil warming in a boreal forest contradict the idea that the projected rise in temperature is likely to lead to forests that are now carbon sinks becoming carbon sources in future. It further postulates that the strength of the sink should increase in the future (by 10 to 20 percent) due to CO₂ fertilization, and then decline, followed by long-term saturation, due to the respiration increase caused by the rise in average temperatures. These forecasts refer to ecosystems that are not used for production, and are not managed or reforested.

XI+3.1.7 Forestry activities to mitigate climate change:

Several actions can be taken in the forestry sector in order to mitigate climate change.

❖ Plant trees to create carbon sinks

Planting new forests, rehabilitating degraded forests and enriching existing forests contribute to mitigating climate change as these actions increase the rate and quantity of carbon sequestration in biomass. This potential has certain physical limitations such as plant growth and available area. Agro-forestry and the planting of multiple- use trees (fruit trees, rubber wood, etc.) also contribute to this objective.

Tree planting projects are doubly interesting from the point of view of CO₂sequestration, inasmuch as carbon storage in durable products such as boards, plywood, or furniture complements the permanent stock in standing trees. Even if the life span of products is limited, an average life span of several dozen years is still significant, since it allows to "gain time" while waiting for cleaner technologies in the energy and transportation sector to develop, and it can also help avoid concentration peaks of CO₂in the planet's atmosphere. If a part of the annual harvest replenishes and increases the pool of wood products, the forestry sector's storage capacity can increase considerably without occupying more space in the landscape.

❖ Protect existing forests to reduce emissions from deforestation

The carbon reservoir in the forest biomass and soils is very large, highlighting the importance of conserving natural forest, and eliminating agricultural practices which contribute to the deterioration of these reservoirs.

One of the issue about carbon sinks is whether conservation activities should be accounted or not. These activities aim to protect a forest area threatened by human-induced deforestation, particularly from farming, to the extent that it contributes more effectively to carbon storage and preserves the biodiversity associated with old-growth forests.

❖ Improve forestry techniques to reduce emissions

Numerous forestry activities emit greenhouse gases; these emissions can be curtailed by applying appropriate techniques.

Forest harvesting can cause serious damage to the soil and the forest stand when carried out inappropriately. Reduced impact logging in the context of forest management and harvest plans involves using a set of techniques, such as pre-planning skidding trails; optimizing landings; directional felling; employing appropriate skidders, which reduce damage to soils, harvested trees and the remaining stand; these damages would heighten mortality and release carbon unnecessarily.

Timber processing also generates a considerable quantity of waste wood, which could either be reduced, or used as a raw material for production or as fuel. Improving the forest industry's efficiency helps limiting the amount of wood waste created by the production process. This could be achieved by increasing product yield, reducing residues, or adding production lines which utilize them as parquet, molding, etc. Using wood wastes in combined heat and power generation, thereby simultaneously generating heat for kiln-drying of wood, energy for running the machines, and electric power for the outside would reduce emissions and valorize these residues, which can substitute for fossil fuels. Moreover, charcoal production also is a process of widely varying efficiency, depending on the method and techniques used, which could be improved.

CHAPTER –XI+4

ESTABLISHMENT AND LABOUR

XI+4.1 Establishment

The list of existing Ranges, Blocks and Beats is given in **Appendix No- XLV**. The position of sanctioned staff and existing staff has been given in Chapter-VI of Part-I. Paragraph No. 6.1. In view of the increased workload on account of developmental activities, more special duty staff shall be required for smooth working in the division. Even the protection work has also become more difficult due to the construction of roads, increasing population and tremendous increase in the prices of timber. Even the remotest forests have become prone to the illicit fellings and encroachments.

The Beats, Blocks and Ranges are small and administratively convenient except Karshala Beat & Patarna Beat of Chowai Range which has larger area. Therefore, new Baru Beat will be created from existing Karshala Beat and Pokhri Beat from existing Patarna Beat of Chowai Range. Similarly the new Beats namely Singh Gad from existing Juagi and Tharla Beat of Arsu Range and new Beats namely Soidhar, Sharvi, Ishwa from existing Luhri, Dalash, Sarahar, Ghatu and Margi of Nither Range. The detail proposed is given in table No**XI+3.1.1**

Table No**XI+3.1**

Sr.No.	Name of new Beat	The Geographical area of new beat (Ha.)	Remarks
1	2	3	4
	Arsu Range		
1	Singh Gad	5966	Singh Gad
	Nither Range		
1	Soidhar	723.14	Vill. Soidhar
2	Sharvi	758.24	Vill. Sharvi
3	Ishwa	645.61	Vill. Ishwa
	Chowai Range		
1	Pokhri	517.85	Vill. Pokhri
	Balu	730.5	Vill. Balu

The quantum of office work at Range level has increased considerably, consequently the Range Officers have to devote more time in the office at the cost of field works. Therefore, all Range Officers should be provided with Range Clerks having knowledge of operating Computer. Similarly, additional ministerial staff is required to cope up the increasing work load in the division office. Services of all the permanent Forest Workers should be utilized in nurseries and for miscellaneous forest protection and regeneration operations.

XI+4.2 Labour

The position of labour supply has been discussed in Chapter-VI of Part-I. All the exploitation and harvesting works are being done by HPSFDC and labour supply mates of Forest

Corporation, for carrying out exploitation of Forests have to import labour from Mandi, Kangra and Chamba Districts. The present rate of unskilled daily wage labour is **Rs.275** per day with an additional increase of 25 % for backward area which is likely to be revised from time to time.

Many developmental schemes are in operation in the tract under various departments, thus there is some shortage of labour. Harvesting and sowing seasons of the agricultural/horticultural crops coincide with the forestry works and adequate local labour is some time not available. Similarly the local labours are mostly working under MGNREGA. Gorkha labours from Nepal are also employed as unskilled daily waged labour in various departmental works. The apple season starts from August onwards. For ensuring the success of forestry work, alternative arrangements may have to be thought of. Permanent labour gangs should be maintained in case of nurseries which require expertise.

CHAPTER –XI+5

CONTROL AND RECORDS

XI+5.1 System of Control

The system of control and records adopted in the forest department will be followed. It has been unfortunate that some of the prescription of Working Plan under revision were not given a serious trial while others were completely ignored. Obviously, the objects of management as set out could not be fully realized. Some of the forest journals do not contain complete information about various operations carried out in the past while some entries are not accurately recorded. Control should be considered as an integral part of plan and record of all operations must be maintained. The following records will be maintained in the division:

XI+5.2 Control Forms

To exercise proper check and control on the prescription and suggestion made in this Working Plan, control forms as prescribed in the Punjab Forest Leaflet No. 11 will be properly maintained/ prepared every year by DFO. The Divisional Forest Officer will submit the control forms 2(a), 2(b), 4 and “C” annually in duplicate, before 30th April to the Chief Conservator of Forests Rampur for scrutiny and counter signature of the Chief Conservator of Forests every year. The control forms must be completed in all respect along with the deviation statement as laid down in chapter X of National Working Plan code, 2014.

XI+5.3 Compartment History Files

Compartment history files have been prepared in duplicate for all RFs, I & II Class DPFs and III Class listed UPFs on standard pattern laid down in chapter-IX of National Working Plan code, 2014 and as per Manual for collection of field data given in **Appendix No– V**. The old compartment history files of the all RFs, I & II Class DPFs and III Class listed UPFs have also been filed along with the new ones for reference. It is prescribed that the compartment history files will be maintained properly and kept posted up to date in April every year. The notes on important silvicultural operations, markings, progress of regeneration and other cultural and subsidiary operations will be recorded in these files by the Inspecting officers. During field tours and annual office inspection, the Divisional Forest Officer will ensure that the compartment history files are properly maintained and are kept up-to-date. The Inspecting officers will invariably write inspection notes on the standard Performa's prescribed in this chapter copies of which will be placed in the concerned compartment history files.

It is prescribed that one set of history files shall remain in the office of DFO and second set in the office of concerned RO. It will be responsibility of DFO and RO to maintain and post each and every compartment history file in his own office.

XI+5.4 Divisional Note Book

This is mainly a record for use by DFO which shows auction results, handing over of lots to HPSFDC, estimation of outturn of lots, result of experiments carried out if any, records of annual seeding of important species, injuries to crop, divisional statistics notes on the trial of exotics and their performance and any other important information regarding divisional works. No such record is being maintained at present and this should be started now. This note book will contain a summary of all the statistics concerning the district and divisional working. This record will be very useful and handy at the time of Working Plan revision.

XI+5.5 Fire Records

A complete record of fires will be maintained both in the Range office and Divisional office. It should also find mention in the concerned compartment history files. Maps of forests burnt showing extent of area burnt will be filled in the compartment history files concerned along with relevant date such as place from which fire originated, nature of fire, damage caused by fire, duration of fire and how it was fought and brought under control.

XI+5.6 Forest Guard book/ beat Manual

Guard book and forest guard book Manual is an important and handy record of beat statistics and activities like details of forests, forest boundaries included cultivation encroachments, record of rights and concession, sowing/plantation, nurseries, seed collection and other silvicultural operations. The forest guard/ beat manual/ book should also contain the information pertaining to boundaries of forest, beat maps showing forests, roads and paths and record of rights and concessions. The un-demarcated protected forest which has been constituted as new DPFs and brought under the systematic management under this plan should also be entered in the forest guard beat manual and all the above information should be maintained in respect of these areas also. Every Forest Guard should maintain it for his beat and DFO will check these manuals during field tours and ensure that these are properly maintained.

XI+5.7 Register of books and Maps

Register of books and maps will be maintained at Range and Divisional level and kept up to date. All roads, bridle paths, inspection paths and buildings constructed during the year should be shown in maps in April every year.

XI+5.8 Register of RFs, I&II Class DPFs and III Class Listed UPFs

Register of all the RFs, I&II Class DPFs and III Class Listed UPFs will be properly maintained and all changes in the area or boundaries recorded every year giving reference of Government orders and notifications.

XI+5.9 Register of Roads and Buildings

Register of roads and buildings will be maintained at Range and Divisional level and kept up to date. All roads and buildings constructed during the year should be entered in April every year along with cost of construction.

XI+5.10 Nursery Journals

A nursery journal for each nursery shall be maintained on the standard format where in the details of all the nursery operations like sowing, germination, weeding, pricking etc. shall be incorporated along with cost.

XI+5.11 Plantation Journals

Plantation journals will be maintained on the standard format for all the plantation areas according to the standing instructions from time to time. The journals must also contain the following information's:-

- (i) Location, legal status, boundaries, configurations, aspect, slope, rock, geology and soil, drainage and depth of soil.

- (ii) Soil suitability and treatment map.
- (iii) Map showing prominent natural features.
- (iv) A statement showing area planted and cost of planting item wise for each year.
- (v) A critical note on success or failure of plantation and corrective steps if any required to be taken for the success of plantation.

XI+5.12 Research Journals

The research journals should be maintained in the division and relevant research activities conducted/undertaken should be entered.

XI+5.13 Divisional FCA cases Register

This will contain data regarding diversion of forest land allowed and compensatory Afforestation details and trees permitted by GOI to be felled in the area concerned and CAT Plan details, if there is any.

XI+5.14 Divisional Forest Rights Act, 2006 {Scheduled Tribes & other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006} cases Register:

This will contain data regarding diversion of forest land allowed and other relevant stipulations and trees permitted by DFO to be felled in the area and other details, if there is any.

CHAPTER –XI+6

SUMMARY OF PRESCRIPTIONS

XI+6.1 Important Prescriptions: The important prescriptions and suggestions of the working plan are as under:

Sr. No	Headings	Prescriptions	Paragraph of the plan																												
1	2	3	4																												
	BASIS OF PROPOSALS																														
1	National Forest Policy and Legislation	The National Forest Policy and Legislation, Himachal Forest Policy described.	1.1.1 to 1.1.3																												
2	Supreme Court on Green Felling and Regeneration	Felling of trees from forest area shall be allowed only as per approved working plan by the Government of India.	1.2																												
3	Objectives of management	The objectives of management prescribed.	1.3																												
	The Deodar Kail Working Circle																														
1	Felling Series	There will be only one felling series for the whole Working Circle i.e. Satluj felling series	2.6																												
2	Comparative Statement	The Comparative Statement of growing stock of Negi's and current plan given	2.8																												
3	Silvicultural System	The Punjab Shelter Wood System	2.9																												
4	Choice of species	Laid down	2.10																												
5	Regeneration Period	30 years	2.11																												
6	Rotation & Exploitable diameter	120 years rotation and exploitable diameter of 60 cm d.b.h.	2.12& 2.13																												
7	Felling Cycle	30 years	2.14																												
8	Division into Periodic Blocks	Four Periodic Blocks have been formed	2.15																												
9	Calculation of Yield	The yield has been calculated by volume for PB-I and PB-IV	2.16																												
10	Total Prescribed annual Yield	The prescribed annual yield in M³ is as under: <table> <tr> <th>Species</th><th>PBI</th><th>PBIV</th><th>Total</th></tr> <tr> <td>Deodar</td><td>5094</td><td>4195</td><td>9289</td></tr> <tr> <td>Kail</td><td>2675</td><td>615</td><td>3290</td></tr> <tr> <td>Fir</td><td>790</td><td>715</td><td>1505</td></tr> <tr> <td>Spruce</td><td>2425</td><td>1415</td><td>3840</td></tr> <tr> <td>Chil</td><td>133</td><td>0</td><td>133</td></tr> <tr> <td>Total</td><td>11117</td><td>6940</td><td>18057</td></tr> </table>	Species	PBI	PBIV	Total	Deodar	5094	4195	9289	Kail	2675	615	3290	Fir	790	715	1505	Spruce	2425	1415	3840	Chil	133	0	133	Total	11117	6940	18057	2.17
Species	PBI	PBIV	Total																												
Deodar	5094	4195	9289																												
Kail	2675	615	3290																												
Fir	790	715	1505																												
Spruce	2425	1415	3840																												
Chil	133	0	133																												
Total	11117	6940	18057																												
11	Control of Yield	The control of yield and the deviation for a year, a period of five year and a plan period shall not exceed +- 25%,+10% and +-05% respectively.	2.18																												

12	Method of executing felling in PB-I areas	The general principles laid down	2.19.1
13	Treatment of PB-II areas	No commercial felling prescribed	2.19.2
14	Treatment of PB-III areas	No commercial felling prescribed	2.19.3
15	Thinning	The general principles laid down	2.19.4
16	Method of executing felling in PB-IV areas	The general principles laid down	2.19.5
17	Table of felling	The felling programme has been laid down	2.20
18	Subsidiary Silviculture operations in PB-I	Works to be carried out and general principle discussed	2.21.1
19	Artificial regeneration in PB-I area	To be carried out to supplement natural regeneration discussed and prescribed.	2.21.2
20	Planting Programme	Prescribed	2.21.3
21	Tending operations	Discussed and prescribed	2.21.4
22	Weeding	Discussed	2.21.5
23	Cleaning	Discussed	2.21.6
24	Fire protection	The areas will be protected from fire discussed and prescribed.	2.22.1
25	Grazing and grass cutting	The grass cutting will be prohibited in all the PB-I areas, till the young crop is beyond the damage i.e. 75 cms and above.	2.22.2
26	Right holder's Demand	The requirements of right holder for timber will be met from the depot as per H.P. Govt. notification dated 26 December, 2013 and 26 February, 2016 rest of the demand of right holders will be met as per the provision of Forest Settlement Report.	2.22.3
27	Closures	Effective closure of all the PB-I areas prescribed	2.22.4
28	Lopping	Lopping may be allowed to the right holders strictly as per the provision of Forest Settlement Report, 1921	2.22.5
29	Regeneration survey	Discussed and prescribed.	2.22.6

THE FIR/SPRUCE WORKING CIRCLE

1	Felling Series	There will be only one felling series for the whole WC i.e. Satluj felling series				3.6	
2	Comparative Statement	The Comparative Statement of growing stock of Negi’s and current plan given				3.8	
3	Silvicultural System	The Punjab Shelter Wood System				3.9	
4	Choice of species	Laid down				3.10	
5	Regeneration Period	30 years				3.11	
6	Rotation & Exploitable diameter	120 years rotation and exploitable diameter of 45 - 55 cm d.b.h.				3.12& 3.13	
7	Felling Cycle	30 years				3.14	
8	Division into Periodic Blocks	Four Periodic Blocks have been formed				3.15	
9	Calculation of Yield	The yield has been calculated by volume for PB-I and PB-IV				3.16	
10	Prescribed Annual Yield	The prescribed annual yield in M ³ is as under:				3.17	
		Species	PBI	PB-IV	Total		Remarks
		Deodar	245	175	420		
		Kail	460	0	460		
		Fir	2180	100	2280		

		Spruce	3485	1085	4570			
		Total	6370	1360	7730			
11	Control of Yield	The control of yield and the deviation for a year, a period of five year and a plan period shall not exceed +10% of the annual prescribed yield.				3.18		
12	Method of executing felling in PB-I areas	The general principles laid down				3.19.1		
13	Treatment of PB-II areas	No commercial felling prescribed				3.19.2		
14	Thinning	Thinning prescribed in accordance with the principles of thinning laid down in Punjab Forest Leaflets No. I and IA.				3.19.4		
15	Method of executing felling in PB-IV areas	The general principles laid down				3.19.5		
16	Table of felling	Felling programme laid down in PB-I & PB-IV.				3.20		
17	Subsidiary Silviculture operations in PB-I	Works to be carried out and general principle discussed				3.21.1		
18	Artificial regeneration in PB-I area	This is to be carried out to supplement the natural regeneration				3.21.2		
19	Planting programme	Detailed planting programme given in the plantation overlapping) Working Circle in Table No.7.2.				3.21.3		
20	Closure and fencing	Discussed and detailed prescribed.				3.21.4		
21	Weeding	Discussed and prescribed.				3.21.5		
22	Fire protection	The areas will be protected from fire discussed				3.22.1		
23	Grazing and grass cutting	Detailed prescribed.				3.22.2		
24	Right holder's Demand	The requirements of right holder for timber will be met from the depot as per H.P. Govt. notification dated 26 December , 2013 and 26 February, 2016 rest of the demand of right holders will be met as per the provision of Forest Settlement Report.				3.22.3		
25	Closures	Effective closure of all the PB-I areas prescribed				3.22.4		
26	Regeneration survey	Discussed and prescribed.				3.22.5		
The Chil Working Circle								
1	Felling Series			There will be only one felling series for the whole WC i.e. Satluj felling series		4.6		
2	Comparative Statement			The Comparative Statement of growing stock of Negi's and current plan given		4.8		
3	Silvicultural System			The Punjab Shelter Wood System		4.9		
4	Choice of species			Laid down		4.10		
5	Regeneration Period			30 years		4.11		
6	Rotation & Exploitable diameter			120 years rotation and exploitable diameter of 60 cm d.b.h.		4.12 & 4.13		
7	Felling Cycle			30 years		4.14		
8	Division into Periodic Blocks			Four Periodic Blocks have been formed		4.15		
9	Calculation of Yield			The yield has been calculated by volume for PB-I and PB-IV		4.16		
10	Total Prescribed annual Yield			The prescribed annual yield in M³ is as under:		4.17		
				Species	PBI		PBIV	Total
				Deodar	0		10	10

		<table> <tr> <td>Kail</td><td>0</td><td>0</td><td>0</td></tr> <tr> <td>Fir</td><td>0</td><td>0</td><td>0</td></tr> <tr> <td>Spruce</td><td>0</td><td>0</td><td>0</td></tr> <tr> <td>Chil</td><td>922</td><td>740</td><td>1662</td></tr> <tr> <td>Total</td><td>922</td><td>750</td><td>1672</td></tr> </table>	Kail	0	0	0	Fir	0	0	0	Spruce	0	0	0	Chil	922	740	1662	Total	922	750	1672	
Kail	0	0	0																				
Fir	0	0	0																				
Spruce	0	0	0																				
Chil	922	740	1662																				
Total	922	750	1672																				
11	Control of Yield	The control of yield and the deviation for a year, a period of five year and a plan period shall not exceed+- 25%,+10% and +-05% respectively of the annual prescribed yield.	4.18																				
12	Method of executing felling in PB-I areas	The general principles laid down	4.19.1																				
13	Treatment of PB-II & PB-III areas	No commercial felling prescribed	4.19.2																				
14	Method of executing felling in PB-IV areas	The general principles laid down	4.19.3																				
15	Thinning	The general principles laid down	4.19.4																				
16	Sequence of felling in PB-I & PB-IV	The felling programme has been laid down	4.20																				
17	Subsidiary Silviculture operations, Cleaning and Thinning in PB-I	Works to be carried out and general principle discussed	4.21																				
18	Artificial regeneration in PB-I area	This is to be carried out to supplement the natural regeneration discussed and prescribed	4.21.1																				
19	Planting Programme	Detailed planting programme given in the plantation (overlapping) Working Circle	4.21.2																				
20	Bush cutting/weeding	Works to be carried out and general principle discussed	4.21.3																				
21	Cleaning	Detailed prescribed.	4.21.4																				
22	Resin tapping	Procedure prescribed	4.22																				
23	Factor affecting the Resin tapping	Detailed prescribed.	4.22.1																				
24	Methodology of Resin Tapping	Procedure prescribed	4.22.2																				
25	Preparatory steps for Resin Tapping and Tapable Diameter	Procedure prescribed	4.22.3																				
26	Method of Resin Tapping	Procedure prescribed	4.23																				
27	Do and don't	Laid down	4.23.1																				
28	Crop Setting	Discussed and laid down	4.23.2																				
29	Other regulations	Effective closure of all the PB-I areas prescribed	4.24																				
30	Fire protection	The areas will be protected from fire- discussed	4.24.1																				
31	Right holder's Demand	The requirements of right holder for timber will be met from the depot as per H.P. Govt. notification dated 26 December , 2013 and 26 February, 2016 rest of the demand of right holders will be met as per the provision of Forest Settlement Report.	4.24.2																				
32	Closures	Effective closure of all the PB-I areas prescribed	4.24.3																				
33	Grazing and grass cutting	Detail prescribed.	4.24.4																				
34	Demarcation of Forests	Discussed and prescribed.	4.24.5																				
35	Regeneration survey	Discussed and prescribed.	4.24.6																				
THE PROTECTION WORKING CIRCLE																							
1	Comparative Statement	The Comparative Statement of growing stock of Negi's and current plan given	5.8																				
	Silvicultural System	No silvicultural system prescribed as no commercial fellings are proposed.	5.9																				
	Choice of species	Laid down	5.10																				
2	Rotation	Only physical rotation prescribed.	5.11																				

3	Calculation of Yield	No yield prescribed as no commercial fellings are proposed	5.12
4	Sequence of Felling	No sequence of fellings proposed	5.13
5	Method of treatment	Discussed and prescribed.	5.14
6	Plantation Programme	Plantation Programme lay down and is given in the plantation (overlapping) Working Circle in Table No.7.2.	5.15
7	Fire Protection	The areas will be protected from fire discussed	5.16.1
8	Closures	The areas to be taken up for plantation and reclamation will be closed to grazing.	5.16.2
9	Grazing	Detail discussed	5.16.3
10	Grass cutting	Detail discussed	5.16.4
11	Lopping	Detail discussed	5.16.5
12	Right holder's Demand	The requirements of right holder will be met as per the provision of Forest Settlement Report.	5.16.6
		THE EUCALYPTUS (OVERLAPPING) WORKING CIRCLE	
1	Felling Series	There will be only one felling series for the whole WC i.e. Satluj felling series	6.6
2	Silvicultural System	No silvicultural system prescribed as no commercial fellings are proposed.	6.8
3	Choice of species	Discussed, no rotation prescribed.	6.9
	Rotation period	Discussed and prescribed.	6.10
5	Felling Cycle	No felling cycle is prescribed.	6.12
6	Calculation of yield	No yield prescribed.	6.13
7	Method of executing Felling	No sequence of fellings is prescribed	6.14
8	Subsidiary Silvicultural Operations, Cleaning and Thinning	Discussed.	6.16
8	Artificial regeneration	Discussed.	6.17
9	Plantation Programme	The planting program laid down and is given in the plantation (overlapping) Working Circle in Table No.7.2.	6.18
10	Bush cutting/weeding	Laid down	6.19
11	Other Regulations	Discussed and laid down	6.20
12	Fire protection	Laid down	6.20.1
13	Closure	Detail discussed	6.20.2
14	Grazing	Detailed prescribed.	6.20.3
15	Lopping	Detailed prescribed.	6.20.4
16	Right holder's Demand	The requirements of right holder for small timber, poles etc. will be met and regulated as Settlement Rights and Silvicultural Availability.	6.20.5
		THE PLANTATION (OVERLAPPING) WORKING CIRCLE	
1	Silvicultural System	No silvicultural system prescribed as no commercial fellings are proposed and only plantation will be raised by planting and sowing.	7.8
2	Rotation & Exploitable diameter	No rotation and exploitable diameter is prescribed.	7.10 & 7.11
3	Calculation of Yield	No yield prescribed as no commercial fellings are proposed	7.12

4	Table of Planting	The Working circle wise and Range wise planting program laid down.	7.13
5	Control and Deviation	Discussed	7.14
5	Subsidiary Silviculture operations	Works to be carried out and general principle prescribed	7.15
6	Nurseries	The importance and technique of nursery prescribed.	7.16
7	New Plantations	Plantation techniques prescribed	7.17
8	Tall Planting	Planting of tall plant discussed and prescribed.	7.18
9	Land Bank	The detail of Land Bank area identified and discussed.	7.19
10	Closures	Effective closure of all the areas prescribed	7.20.1
11	Fire protection	The areas will be protected from fire described.	7.20.4
12	Plantation Records	Detailed instructions prescribed.	7.21
13	Monitoring and evaluation	Monitoring and evaluation of plantation activities prescribed.	7.22
THE NON TIMBER FOREST PRODUCE (OVERLAPING) WORKING CIRCLE			
1	Silvicultural System	No silvicultural system prescribed as no commercial fellings are proposed	8.7
2	Calculation of yield	No yield prescribed as the most NTFPs are extracted through right holders and however, maintaining proper record suggested.	8.8
3	Method of treatment & Rotational Extraction	Only rotational extraction is prescribed	8.9 & 8.9.1
4	Artificial propagation and conservation	Measures are suggested for the conservation, protection and propagation of medicinal plants.	8.10
5	Community versus Official efforts in Conservation of Medicinal Plants	Discussed	8.11
6	Propagation Techniques	The technique of propagation and harvesting of some important plants species prescribed.	8.12
7	Other Non Timber Forest Produce	Brief description of other NTFP like <i>Morchela deliciosa</i> , <i>Dioscorea deltoides</i> etc. discussed.	8.13
8	Campaign for conservation and preservation of endangered species	Discussed and prescribed.	8.14
9	Other Regulations	Legal Measures for extraction/collection and export of NTFP's prescribed under the provision Indian Forest Act, 1927.	8.15
10	Fire Protection	The areas will be protected from fire described.	8.15.2
11	Right Holders Requirements / Demand	The requirements of the Right holders will be met as per settlement provision.	8.15.3
12	Issues and Challenges	Discussed	8.16
13	Assessment of major NTFP species	Discussed	8.17
14	Strategy	Discussed	8.18
THE FOREST PROTECTION (OVERLAPPING) WORKING CIRCLE			
1	General constitution	General constitution of working circle described	9.1
2	General character of vegetation	General character of vegetation described	9.2
3	Special Objects of management	Special Objects of management of the working circle described.	9.3
4	Illicit felling	The illicit felling of trees, causes and modus operandi of illicit felling discussed and described	9.4
5	Forests area prone to illicit Fellings	The detail of forests area are prone to illegal felling/cutting and effectives protection and measures discussed	9.4.4
6	Preventive/Remedial measures	Preventive/Remedial measures discussed and prescribed.	9.4.5

7	Prosecution of forest offences	Procedure discussed and prescribed with case Law.	9.4.6
8	Compounding of Forest Offences	Procedure discussed and prescribed with case Law.	9.4.7
	Disposal of Forest Offences	Procedure discussed and prescribed with case Law.	9.4.8
9	Indian Forest (HP 2 nd Amendment) Act, 1991	The provisions of IFA 2 nd amendment Act, 1991 is discussed and prescribed.	9.4.9
10	Fire protection	Causes of forest fire, factor contributing to Fire Damage, fire season, Special Fire Risk Zones etc. discussed and described.	9.5 to 9.5.6
11	Fire Lines	The detail of existing and proposed fire lines given.	9.5.7
12	Control Burning	Triennial cycle for control burning is proposed and prescribed.	9.5.9
13	Preparation of Annual Plan	Preparation of annual plan and administrative measures are suggested.	9.5.11
14	Legal Measures	Procedure discussed and described with case law.	9.5.13
15	Assessment of Loss caused by fire	The mythology for assessment of fire loss discussed and prescribed.	9.5.14
16	Fire Record	Maintenance of fire record suggested.	9.5.15
17	Encroachment	Causes of encroachment, preventive measures, and steps taken for eviction of encroachment along with annual programme for detection of encroachment is discussed and prescribed.	9.6 to 9.6.3
18	Mining	The Supreme Court on mining, state mining policy and list of stone crushers in Rampur Forest Division, condition for running of stone crusher and mining lease, delegation of powers etc. discussed and described with case law and rules.	9.7
19	Illegal Mining	Legal provision for detection, search, penalty, preventive measures and monitoring and review of the mining areas discussed and prescribed under Mines & Minerals Rules and Act.	9.7.8 to 9.7.16
20	Poaching, Penalties, Bail & Cognizance of Offences.	Detection of poaching, preventive measures etc. discussed and described under the Wild Life (Protection) Act, 1972.	9.8 to 9.8.4
	THE JFM / PFM (OVERLAPPING) WORKING CIRCLE		
1	Emergence of Joint Forest Management	The evolution of joint forest management is discussed and prescribed.	10.2
2	Concept of participatory forest management	Concept of participatory forest management is discussed and prescribed.	10.3
3	Joint Forest Management In H.P.	Discussed and prescribed	10.4
4	Formation of Forest Development Agency (FDA)	Procedure prescribed.	10.5
5	Special Objective of JFM	Discussed and prescribed.	10.6
6	The World Bank aided Mid-Himalayan Watershed Development Project	Discussed and prescribed.	10.7
7	Strategic Approach of Participatory Forest Management (PFM) in Himachal Pradesh (H.P.)	Discussed and prescribed.	10.8
8	Implementation of JFM in Anni Forest Division	Discussed and prescribed.	10.9
	Constraints to Participatory Management	Discussed and prescribed.	10.10
9	Scope of JFM	Discussed and prescribed.	10.11 to 10.11.2
10	Potential activities of JFM committees	Potential activities of JFM committees suggested.	10.11.3

11	Preventive/Remedial Measures	Preventive/Remedial Measures prescribed.	10.11.4
12	Strengthening of Joint Forest Management	Procedure for Strengthening of Joint Forest Management is prescribed.	10.11.5
13	Role of Women in JFM	Role of Women in JFM is discussed and prescribed.	10.11.6
	Project Impact & Benefits	The project Impact & Benefits prescribed.	10.12
	Monitoring & Evaluation	Process of monitoring & evaluation discussed.	10.13
THE WILDLIFE MANAGEMENT (OVERLAPPING) WORKING CIRCLE			
1	Importance of wild life	The importance of protection and preservation of wild life is discussed and prescribed.	11.2
2	Management Imperatives	Discussed and prescribed.	11.5 to 11.5.2
3	Human Wild Life Conflict	Discussed and prescribed.	11.5. 3 to 11.5.5
4	Conflict types & Remedial Measures	Discussed and prescribed.	11.6
5	Management Initiatives required to Address Human-Wild Life Conflicts	Discussed and prescribed.	11.7 to 11.7.10
6	Compensation for damages caused by wild Animals	The rates for grant of relief for damages prescribed.	11.8
7	Management Prescriptions	Management Prescriptions Described and prescribed.	11.9
8	Mitigating Man Animal Conflicts	Discussed and prescribed.	11.9.6
9	Census of Wild Life	Latest census of monkey given.	11.9.7
10	Compensation for damages caused by Monkey	The detail of compensation paid for the damages caused by the monkey.	11.10
11	Monkey-Human Interface	Discussed and prescribed.	11.11
12	Strategy to Mitigate Monkey Menace	Strategy to Mitigate Monkey Menace and Monkey Sterilization Programme described and prescribed.	11.12 to 11.12.1
13	Causes of increase in Monkey Population	Detail discussed	11.13
14	Some of the facts about monkeys	Detail discussed	11.14
15	Mitigation Measures	Detail discussed	11.15
16	Conservation options	Detail discussed	11.16
GENERAL FINANCIAL FORECAST AND FINANCIAL PLAN OF OPERATION			
1	Future revenue and Expenditure	The future revenue and Expenditure anticipated is described.	XI+1.1
2	Future Yield	Annual expected yield in different WC	XI+1.3
3	Expected Revenue	The expected future revenue anticipated to be Rs.1120.35 per annum (in lacs)	XI+1.4
4	Future Expenditure	The expected future expenditure anticipated to be Rs.859.05per annum (in lacs)	XI+1.5
5	Cost of Working Plan	The total cost for preparation of Working Plan is Rs. 26.07/hac.	XI+1.6
MISCELLANEOUS REGULATIONS			
1	Petty felling	Petty felling have been defined	XI+2.1
2	Deviations	Deviations defined and regulations made regarding the same	XI+2.2
3	Demarcation of forest	Checking of boundaries of the demarcated forests with the help of their maps and preparations of boundary register has been prescribed. Survey and demarcation of un-demarcated protected forest has been suggested.	XI+2.3
4	Forest Settlements	Discussed and prescribed.	XI+2.4
5	Creation of New Protected Forests	Discussed and prescribed.	XI+2.5
6	Entries in Revenue Record	Needs to be reconciled and entries made in the Revenue record.	XI+2.6

7	Revisions of Forest Settlement Rights.	Discussed and prescribed.	XI+2.7
8	Forest boundaries	Discussed and described. Necessary step for getting demarcation of forest land from Revenue Authority under Section 107 of the H.P. Land Revenue Act, 1954 for ascertaining the position of BPs.	XI+2.8
9	Periodic checking of boundaries	The periodic checking of boundaries is prescribed and norms fixed. A quinquennial programme for checking of forest boundaries has also been prescribed.	XI+2.9
10	Compartment and sub compartment boundaries	The sign board indicating the compartment and sub-compartment are prescribed to be affixed on prominent sites/location.	XI+2.10
11	Maps	Procurement of new maps/survey sheets suggested.	XI+2.11
12	Beat Map	Beat map on 4"=1 mile scale is suggested to be provided to each forest guard.	XI+2.12
13	Water supply	Discussed and prescribed.	XI+2.13
14	Rain and snow gauges	No rain gauges are available and new gauges to be installed are suggested.	XI+2.14
15	Timber for right holders	Discussed and prescribed.	XI+2.15
16	Forest Rights and Duty	Discussed and prescribed.	XI+2.16
17	Person bound to Assist Forest Officer	Legal provision to assist forest officer is discussed and prescribed under the provision of Indian Forest Act, 1927.	XI+2.17
18	Timber as Free Grant	Discussed and prescribed.	XI+2.18
19	Grazing	Discussed and prescribed.	XI+2.19
20	Closure notification	Closure should be got issued under Section 30 (b) of Indian Forest Act, 1927.	XI+2.20
21	Lopping	Discussed and prescribed.	XI+2.21
22	Fire Protections	Detail of fire protection measures prescribed.	XI+2.22
23	Encroachments	Encroachments discussed and suggestions to prevent encroachments prescribed.	XI+2.23
24	Illicit felling, illegal mining and Poaching	The preventive and control mechanism under the various Act with regard to Illicit felling, illegal mining and Poaching discussed and prescribed.	XI+2.24
25	Communication Network	Improvement of communication system is suggested.	XI+2.25
26	Geo-referencing in Forestry Operations	Geo-referencing of forestry operations suggested.	XI+2.26
27	Research and sample plots	Detail of old sample plots described.	XI+2.27
28	Preservation Plots	Selection of suitable preservation plots suggested.	XI+2.28
29	Roads, paths & buildings	Discussed.	XI+2.29
30	Ban on green fellings	Ban on green fellings discussed and described.	XI+2.30
31	Land Bank	Discussed and prescribed.	XI+2.31
32	Diversion of Forest Land	Discussed and prescribed.	XI+2.32
33	Non-Timber Forest Produce	Discussed and prescribed.	XI+2.33
34	Saw Mill and Depot	Discussed and prescribed.	XI+2.34
35	Felling in Private Areas	Discussed and prescribed.	XI+2.35
36	H.P. Land Preservation Act, 1978	Ten year felling Programme is discussed and prescribed.	XI+2.35.1
37	Punishment for offences	Discussed and prescribed.	XI+2.35.2
38	Forest Produce (Regulation of Trade) Act, 1982	Discussed and prescribed.	XI+2.35.3
39	Forest produce transit (Land Routes) Rules, 1978	Discussed and prescribed.	XI+2.35.4
40	Punishment for Offences	Punishment for contravention of any provisions of Act or the Rules made there under, is discussed and prescribed.	XI+2.36

41	Watershed Management	Detail discussed and described	XI+2.37
42	Objectives of Watershed Management	Detail discussed and described	XI+2.37.1
43	Causes of Watershed Management	Detail discussed and described	XI+2.37.2
44	Eco-Tourism	Scope of Eco-Tourism along with various relevant provisions discussed and prescribed.	XI+2.38
45	Eco-Tourism Policy, 2017	Detail Discussed	XI+2.38.1
46	Shri Khand Mahadev Yatra	Religious sanctity of Shri Khand Mahadev Yatra along with route to visit the deity and remedial measures are discussed and prescribed.	XI+2.38.2
47	Sereolsar Lake	Discussed.	X1 2.38.3
48	Eco-Tourism in Baga Sarahan	Discussed.	X1 2.38.4
49	Remedial Measures	Discussed and prescribed	X1 2.38.5
50	Bio diversity conservation and Development	Discussed	XI 2.39
51	Gaushala or Gausadan	Discussed and prescribed.	XI+2.40
52	Carbon stock carbon sequestration and Mitigation.	Discussed.	XI+2.41
53	Regeneration Assessment Survey	Regeneration assessment survey of PB-I forests discussed and prescribed.	XI+2.42
FOREST AND CLIMATE CHANGE			
1	Introduction	Discussed	XI+3.1
2	Climate Change Impact, adaptation and mitigation	Discussed	XI+3.1.1
3	Issue and Challenges	Discussed	XI+3.1.2
4	Biodiversity Conservation and climate change	Discussed	XI+3.1.3
5	Guidelines for integrating Biodiversity Conservation	Discussed	XI+3.1.4
6	The scenario/impacts on mountain eco-system in Himachal Pradesh:	Discussed	XI+3.2
7	The role of forests in climate change	Discussed	XI+3.3
ESTABLISHMENT AND LABOUR			
1	Establishment	Discussed	XI+4.1
2	Labour	Discussed	XI+4.2
CONTROL AND RECORDS			
1	System of Control	Discussed	XI+5.1
2	Control Forms	Discussed	XI+5.2
3	Compartment History files	Discussed	XI+5.3
4	Divisional Note Book	Discussed	XI+5.4
5	Fire records	Discussed	XI+5.5
6	Forest Guard book /beat Manual	Discussed	XI+5.6
7	Register of books and maps	Discussed	XI+5.7
8	Register of RFs, I&II class DPFs and III class listed UPFs	Discussed	XI+5.8
9	Register of road and building	Discussed	XI+5.9

10	Nursery journals	Discussed	XI+5.10
11	Plantation Journals	Discussed	XI+5.11
12	Research Journals	Discussed	XI+5.12
13	Divisional FCA cases register	Discussed	XI+5.13
14	Divisional Forest Rights Act, 2006 {Scheduled Tribes & other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006} cases Register	Discussed	XI+5.14

Dated:

Sd/-

(Dr. Chaman Lal), HPFS

W.P.O-cum- DFO, Anni.

Sd/-

(Ajit Thakur), IFS

Chief Conservator of Forests,

Rampur Circle, H.P

Sd/-

(Mr. Ashutosh Garg), IAS

Deputy Commissioner,

Kullu, H.P.

Sd/-

(Harsh Vardhan Kathuria), IFS

CCF Working Plan

& Settlement, Mandi, H.P

Sd/-

(Ajay Srivastava), IFS

Pr. CCF (HoFF),

Himachal Pradesh, Shimla



भारत सरकार / GOVERNMENT OF INDIA
एकीकृत क्षेत्रीय कार्यालय
Integrated Regional Office
पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय
Ministry of Environment, Forest and Climate Change
सी.जी.ओ. कॉम्प्लेक्स, शिवालिक खण्ड, लॉगवुड
CGO Complex, Shivalik Khand, Longwood
शिमला, हिमाचल प्रदेश-171001
Shimla, Himachal Pradesh - 171001



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0177-2652541
फैक्स/Fax: 0177-2657517

क्रमांक 13-7(20)/1997-ROC/54

दिनांक-07.02.2023

सेवा में,

अतिरिक्त मुख्य सचिव (वन)
हिमाचल प्रदेश सरकार
आर्मसडेल बिल्डिंग, शिमला
हिमाचल प्रदेश-171002

विषय:- आनी वन मण्डल की कार्य योजना आलेख के संबंध में।

- संदर्भ:-
- (1) मुख्य अरण्यपाल (कार्य योजना एवं बंदोबस्त), हिमाचल प्रदेश के पत्रांक WP/14/Anni F.D./1482 दिनांक 15.09.2021
 - (2) दिनांक 28.09.2021 तथा 24.03.2022 को आयोजित स्थायी सलाहकार समिति की बैठक का कार्यवृत्त।
 - (3) मुख्य अरण्यपाल (कार्य योजना एवं बंदोबस्त), हिमाचल प्रदेश के पत्रांक WP/14/Anni F.D./810 दिनांक 16.07.2022

महोदय,

इस कार्यालय को मुख्य अरण्यपाल (Working Plan and Settlement) मण्डी, हिमाचल प्रदेश द्वारा संदर्भित पत्रों के साथ वन (संरक्षण) अधिनियम, 1980 के तहत केन्द्र सरकार के अनुमोदन हेतु आनी वन मण्डल (अवधि 2022-23 से 2031-32) की कार्य योजना का अंतिम आलेख प्रेषित किया गया था।

उक्त कार्य योजना का वन (संरक्षण) अधिनियम, 1980 एवं उसमें किए गए संशोधनों, राष्ट्रीय वन नीति 1988, राष्ट्रीय कार्य योजना संहिता-2004, माननीय उच्चतम न्यायालय द्वारा रिट याचिका (सिविल) संख्या 202/1995 सपठित रिट याचिका 171/1996 तथा पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय, भारत सरकार, नई दिल्ली द्वारा समय-समय पर जारी किए गए दिशानिर्देशों के आलोक में इस कार्यालय द्वारा परीक्षण किया गया।

उक्त कार्ययोजना (अवधि 2022-23 से 2031-32) को भारत सरकार, वन (संरक्षण) अधिनियम, 1980 के तहत सम्यक् विचारोपरांत लागू करने की स्वीकृति निम्नलिखित शर्तों पर प्रदान करती है:-

1. अनुमोदन इस पत्र के जारी होने की दिनांक से प्रभावी होगा।
2. उक्त स्वीकृति इस पत्र के जारी किए जाने की तिथि से 31 मार्च, 2032 तक प्रभावी रहेगी।
3. कार्य योजना काल के दौरान प्रबन्धित वन क्षेत्र का भौतिक रूप से सर्वे एवं प्रचलित मानक के सीमा खम्भों के माध्यम से सीमांकन का प्रयास किया जाना चाहिए, जिन पर अक्षांश एवं देशांतर अवस्थिति, तथा forward and backward bearing इंगित हो।
4. विभिन्न न्यायालयों में अतिक्रमण से संबंधित दाखिलवादों, यदि कोई हो, पर निगरानी रखी जाएगी तथा समयबद्ध तरीके से वन क्षेत्र में किए गए अतिक्रमण को खाली कराया जाए।

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5. वन (संरक्षण) अधिनियम, 1980 के प्रावधानों एवं इसके अंतर्गत समय-समय पर जारी किए गए नियमों, दिशानिर्देशों का कठोरता से पालन किया जाएगा।
6. रिट याचिका (सिविल) संख्या 202/1995 में माननीय उच्चतम न्यायालय द्वारा पारित आदेश दिनांक 12.12.1996 के अनुपालन में ग्रीन फैलिंग (हरे वृक्षों के पातन) पर तब तक पाबन्दी रहेगी, जब तक कि माननीय उच्चतम न्यायालय तथा/अथवा केन्द्र सरकार से इसकी स्वीकृति न प्राप्त हो जाए।
7. रिट याचिका (सिविल) संख्या 202/95 गोदावर्मन थिरुमलपाद बनाम भारत संघ में दाखिल अंतर्वर्ती आवेदनों के विषय में माननीय सर्वोच्च न्यायालय के आदेशों को कड़ाई से पालन किया जाएगा, जब तक कि आदेश लागू है या अन्यथा उपान्तरित न हुआ हो, माननीय सर्वोच्च न्यायालय के आदेश से भिन्न कोई भी उपचार या संकिया स्थगन में रखी जाएगी। वन (संरक्षण) अधिनियम, 1980 तथा इसके अंतर्गत जारी सभी संबंधित दिशानिर्देशों का पालन किया जाएगा।
8. इसके अतिरिक्त, माननीय सर्वोच्च न्यायालय के आदेश दिनांक 22.09.2000 के अनुपालन में राज्य सरकार यह सुनिश्चित करेगी कि वन पुनरुत्पादन, इस कार्य योजना के अंतर्गत निष्पादित किए गए वन पातन के अनुपात में हो।
9. किसी भी प्रकार का निषेध पातन पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय, केन्द्र सरकार के दिशानिर्देशों के अनुसार बिना सक्षम स्वीकृति के अनुमत नहीं होगी। ऐसी किसी भी स्वीकृति के लिए राज्य सरकार को नियत समय पूर्व ही इस कार्यालय में आवेदन प्रस्तुत करना होगा।
10. माननीय सर्वोच्च न्यायालय के आदेश दिनांक 22.09.2000 एवं पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय, नई दिल्ली के आदेश क्रमांक 9-7/2012आर.ओ.एच.क्यू. दिनांक 23.02.2018 के निर्देशों के अनुसरण में अतिरिक्त प्रधान मुख्य वन संरक्षक (के) की अध्यक्षता में एक क्षेत्रीय अधिकृत कमेटी (R.E.C.) का गठन किया गया है जो वन पातन के अनुपात में पुनरुत्पादन को सुनिश्चित करने के लिए विदोहन की उस मात्रा का निर्णय करेगी जिसकी अनुमोदित कार्य योजना के अधीन अनुमति दी जा सके। भविष्य में इस संबंध में जारी केन्द्र सरकार के अनुदेशों/निर्देशों को कड़ाई से पालन किया जाएगा। पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय, नई दिल्ली द्वारा गठित कमेटी से अनुमति लेने के बाद ही राज्य सरकार द्वारा पातन किया जाना है। प्रति वर्ष के वन उपज के आंकड़े इस कार्यालय को प्रेषित किए जायेंगे।
11. पुनरुत्पादन को पातन के अनुपात में रखने हेतु वन पुनरुत्पादन संकिया के कार्यान्वयन के लिए आवश्यक निधि का आबंटन किए बिना कोई भी वन पातन निष्पादित नहीं किया जाएगा। वन पुनरुत्पादन की विफलता या पुनरुत्पादन संकिया के निष्पादन में किसी कमी की स्थिति में आगे कोई भी वन पातन आरम्भ नहीं किया जाएगा, जब तक कि विफलता या कमी की पूर्ति न कर ली जाये

12. 30 डिग्री अथवा उससे अधिक ढाल पर वृक्षों का पातन नहीं किया जाएगा। इसी प्रकार यथासंभव नदी के किनारों तथा अपरदन/भू-स्खलन संभावित क्षेत्रों में भी वृक्षों का पातन न किया जाये।
13. वन संरक्षण के समस्त आयामों का नियमित रूप से पालन किया जाएगा।
14. कार्य योजना में उद्धृत समस्त उपचारों का पूर्ण रूप से पालन किया जाएगा एवं विचलन को न्यून रखने का प्रयास किया जाएगा तथा ऐसे विचलनों को इस कार्यालय द्वारा शीघ्र अनुमोदन हेतु प्रस्तुत किया जाएगा।
15. इस कार्ययोजना में उद्धृत समस्त उपचारों को पूर्ण करने हेतु वांछित वित्तीय एवं अन्य संसाधनों की उपलब्धता सुनिश्चित की जाएगी।
16. Control Form के माध्यम से कार्ययोजना के उपचारों के अनुसार किए गए पातन तथा वन (संरक्षण) अधिनियम, 1980 के तहत किए गए पातन को पृथक-पृथक अभिलेखों में संधारित किया जाएगा।
17. प्रत्येक वार्षिक वर्ष में किए गए पातन एवं पुनरुत्थान के समस्त आंकड़ों को राज्य सरकार 30 नवम्बर तक इस कार्यालय को प्रस्तुत करेगी।
18. इस कार्ययोजना का अनुमोदन स्वतः ही वन क्षेत्रों में किसी प्रकार के गैर वार्षिक गतिविधि की स्वीकृति नहीं मानी जा सकेगी।
19. वन क्षेत्रों से वन (संरक्षण) अधिनियम, 1980 के तहत सक्षम स्वीकृति के बिना रेत, बजरी, चट्टान, मृदा आदि का दोहन वर्जित रहेगा।
20. इस कार्य योजना की मध्यावधि समीक्षा 2027-28 में की जानी चाहिए।
21. कार्ययोजना में अब तक प्रत्यावर्तित वन क्षेत्रों का समस्त विवरण अंकित किया जाना चाहिए जिसमें प्रत्यावर्तित वन क्षेत्र, क्षतिपूरक प्राप्त एवं वृक्षारोपित गैर वन क्षेत्र, शेष क्षतिपूरक वन/गैर वन क्षेत्र का समस्त विवरण प्रस्तुत हो। प्रत्यावर्तन के सापेक्ष प्राप्त गैर वन क्षेत्रों को आरक्षित वन क्षेत्र घोषित कराने की प्रगति का भी उल्लेख किया जाए।

सामान्य शर्तें:-

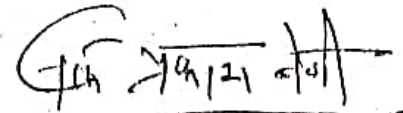
1. संयुक्त वन प्रबंध/जे.एफ.एम. (JFM) हेतु सूक्ष्म योजनाओं के प्रावधान/उपचार कार्ययोजना के विस्तृत ढांचे/दिशा-निर्देशों से विचलित नहीं होने चाहिए एवं माननीय सर्वोच्च न्यायालय के विभिन्न आदेशों के अनुरूप होंगे।
2. एतद् द्वारा लगाई गई शर्तों के साथ पठनीय कार्य योजना के प्रावधानों से कोई विचलन वन (संरक्षण) अधिनियम 1980 के अंतर्गत, केन्द्र सरकार की पूर्व अनुमति के बिना नहीं किया जाएगा।
3. पुनरुत्पादन के वृद्धि संबंधी आंकड़े (Growth Statistics) उत्तरजीविता का रिकार्ड, कार्ययोजना में समय-समय पर जोड़ा जाएगा।
4. मृत, मृतप्राय और रोगग्रस्त वृक्षों तथा अधिकारों एवं रियायतों को प्रदान करने के साथ-साथ समस्त अवैध पातन को सम्मिलित करते हुए, सभी प्रकार के पातन का संग्रहण

- (Compilation) उनके स्टैण्ड वाल्यूम के आंकलन के साथ, उसी Volume Table के अनुसार करना चाहिए, जो संवृद्धि (Growth Stock) के मूल्यांकन के लिए उपयोग की जाती है। यह रिपोर्ट प्रतिवर्ष कार्यवृत्तवार और कक्षवार क्षेत्रीय वन मण्डलाधिकारी द्वारा तैयार की जाएगी और नियंत्रण वर्ष की समाप्ति के दो माह के भीतर अरण्यपाल, कार्य योजना द्वारा इस उद्देश्य के लिए तैयार किये गये प्रपत्र में अरण्यपाल कार्य योजना को प्रस्तुत की जाएगी। इस प्रकार के अपसारण (removal) का सुसंगत वर्ष (Relevant year) की निर्धारित पातन उपज में समायोजित कर दिया जाएगा।
5. गैर काष्ठीय (Non-Timber) वनोपज के सतत् प्रबंध (Sustainable Management) को सुनिश्चित करने के लिए उनके अपसारण (removal) के पहले, अनुमानित मात्रा (Estimated Quantity) का कार्य योजना के अनुसार वैज्ञानिक मूल्यांकन किया जाएगा।
 6. दुर्लभ, लुप्तप्रायः तथा संकटापन्न प्रजातियों की निकटता से निगरानी (Monitoring) की जाएगी एवं उनके संरक्षण (Protection and Conservation) के लिए पर्याप्त उपाय किए जाएंगे।
 7. अतिकमण हटाने के लिए एक निश्चित योजना बनायी जाएगी एवं रिक्त क्षेत्र में उपयुक्त स्थानीय प्रजातियों का वृक्षारोपण किया जाएगा।
 8. मानक संवर्धन संक्रियाओं (Standard Silvicultural Operations) को छोड़कर कोई भी पातन (Felling) अन्य कार्यवृत्तों में नहीं किया जाएगा।
 9. युवा-वय समूह (Young age group) के वृक्षों को उनका पर्याप्त पुनरुत्पादन एवं संरक्षण सुनिश्चित करने के लिए प्रयत्न किये जाएंगे।
 10. चूंकि ग्रीष्मकाल के दौरान, अग्नि सबसे ज्यादा विनाशकारी कारकों में से एक है, अतः अग्नि योजना की तैयारी को शामिल करते हुए, पर्याप्त व्यवस्थाएं की जाएगी।
 11. स्थानीय प्रजातियों का कृत्रिम पुनरुत्पादन करने के लिए प्रयास इस प्रकार किए जाने चाहिए कि इससे जैव-विविधता संरक्षण एवं काष्ठ ईंधन, चारा व ईमारती लकड़ी की मांग की पूर्ति, दोनों उद्देश्यों को पूरा किया जा सके।
 12. संवृद्धि स्टॉक (Growing Stock) की सेहत को सुधारने हेतु, मानक संवर्धन संक्रियाओं की अनुमति, वन मण्डलाधिकारी या उसके ऊपर के पदाधिकारी के कड़े निरीक्षण के अधीन दी जाएगी, किसी विशेष प्रजाति को प्रथामिकता नहीं दी जाएगी एवं वनों का स्वरूप यथावत (maintained) रखा जाएगा। सुधार पातन हेतु छपान करते समय सुनिश्चित किया जाएगा कि सुधार पातन के पश्चात शेष बचा Growing Stock की उस क्षेत्र के लिए Yield Table के अनुसार होने वाले Growing Stock से कम न रहे।
 13. कार्य योजना क्षेत्र में विदेशी प्रजातियों का वृक्षारोपण नहीं किया जाएगा।
 14. राष्ट्रीय कार्य योजना संहिता में आदेशाधीन दस्तावेजों व परिशिष्टों का कार्य योजना में समावेश किया जाएगा।

15. कार्य योजना में अधिरोपित उपरोक्त सभी शर्तों का वार्षिक पालन प्रतिवेदन (Yearly Compliance Report) 31 मार्च की स्थिति में प्रत्येक वर्ष जून माह में भारत सरकार को प्रेषित किया जायेगा।

उल्लेखनीय है कि यह क्षेत्रीय कार्यालय पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय, भारत सरकार अथवा माननीय सर्वोच्च न्यायालय के आवश्यकतानुसार कार्य योजना के अनुमोदन की समीक्षा, संशोधन अथवा आहरण करने हेतु स्वतंत्र होगा तथा कार्य योजना में वर्णित समस्त उपचार समसामयिक नीतियों एवं विधियों के संपूरक होंगे।

भवदीय,

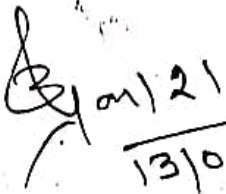


क्षेत्रीय अधिकारी 13/02/2023

प्रतिलिपि सूचनार्थ एवं आवश्यक कार्यवाही हेतु:-

1. प्रधान मुख्य अरण्यपाल (HoFF), हिमाचल प्रदेश वन विभाग, टालैण्ड, शिमला-171001, हिमाचल प्रदेश।
2. प्रधान मुख्य अरण्यपाल (वन्य जीव)-सह-मुख्य वन्य जीव वार्डन, हिमाचल प्रदेश वन विभाग, टालैण्ड, शिमला-171001, हिमाचल प्रदेश।
3. मुख्य अरण्यपाल (कार्य योजना एवं बंदोबस्त), हिमाचल प्रदेश वन विभाग, मण्डी-175001, हिमाचल प्रदेश।
4. आदेश पत्रावली।

प्रभासी कार्य योजना



13/02/2023

