CHAPTER III
COLONIZATION OF DARJEELING FORESTS

A consideration of ecology, environment and the colonial interventions in natural and socio-economic landscape, pattern of interaction between indigenous people, immigrated settlers and British colonizers invites us to rethink the landscape of Darjeeling hills not only in the standard evolving narratives of forest history but also on the ownership of natural resources and resource extraction under the aegis of colonialism. In suggesting a (re) reading, it has been attempted to make use of available documented sources. Such evidences would help us to read the pattern of transformation that took place in all wakes of life, to read the changing landscape of Darjeeling hills at the cost of forest clearance and forest depletion from eco-historical perspective. The principal purpose of the chapter is to understand the material-social, cultural-economic, political and ecological transformation of forest landscape of colonial Darjeeling assumed to be as a sub-space of scale from the perspective of south Asian environmental history.

Commercialization and commoditization of forest as a mode of resource use was introduced in colonial Darjeeling at a later stage. By then massive forest clearance was taken place for expanding tea industries, cinchona plantations, roads constructions, railways and physical infrastructural developments for its geopolitical and strategic importance as a military station and for its climatic value as sanatoria, and colonial growth centre. The British introduced rapid, widespread and irreversible changes in making and shaping Darjeeling a location of importance at the cost of forests which had concomitant ecological and social ramifications.

There is no government record about pre-colonial forestry in India. The different narratives suggests that pre-colonial rulers did not disturb the indigenous people living in and around the forests and their political aspiration were restricted to fertile agricultural lands, country

sides and towns. Even till the end of 18th century, the East India Company administration did not pay attention to Indian forests and people living in those forests.[1] The beginning of nineteenth century witnessed a different British approach to land and forest usage in India. Indian forests were declared as Crown's land. In 1855, Lord Dalhousie issued the historic Forest Charter establishing unquestionable supremacy over forests in India and out rightly rejected the rights and practices of the Indigenous people such as grazing, collection of forest produce, shifting cultivation as the basis for ownership of the commons. Precisely, throughout the second half of the nineteenth century, India's forests were continuously being reserved and nationalized, depleted and the natural rights of the indigenous people had been eroded through a series of legislations.[2] Forests of Darjeeling were also brought directly under British hold and control to realize the grand imperial utilitarian aspiration. British forest policy was drafted for the realization of maximum revenue in perpetuity. The wealth of the commons was ceased and was declares as 'revenue' which belonged to the Crown.[3]

The basic edifice of colonial forest policy in India can well be traced back to a Memorandum of the Government of India dated 3rd August, 1855. The Memorandum was principally framed on the basis of the report prepared by Dr. McClelland and submitted to the government of India in 1854. This Report raised concern on unrestricted forest clearance by the private parties and set forth the responsibility of the Government to prevent such unlicensed extraction of forest resources.[4]

In 1855, Lord Dalhousie issued the historic Forest Charter enumerating for the first time an outline of permanent program of Forest in India, where he proclaimed that timber standing on a state forest was state property to which individuals had no rights or claims. The colonial forest policy in the form of a Resolution No.22F of the Government of India came into being on October, 19, 1894. The main

thrusts of colonial forest policy had been to promote the general well-being of the country, to preserve climatic and physical conditions of the country and to fulfill the needs of the people, but the actual agenda of the British was to usurp the forest for imperial cause.[5]

The first attempt at asserting monopoly over forest was through the Indian Forest Act of 1865. By this Act, the colonial state was empowered to proclaim any land covered with trees or bushes as state forest and to make rules regarding the management of the same by notification. Punishments for the breach of the provisions of the Act were categorically prescribed. The Act, for the first time attempted to regulate the collector of forest produce by the forest dwellers. The establishment of absolute proprietary right of the state was debated within the colonial officials and at the end, it was resolved to consider the customary use of the forest by the forest natives as based on 'privilege' and not on 'right'.[6] The Forest Act of 1878 was much more comprehensive and detailed in its layout. The Act, for the first time, divided forests into reserved forests, protected forests and village forests. The forest dwellers were to record their claims over land and forest produce in the designated reserved and protected forests by the provisions of the Act. The Act prohibited/regulated trespassing and pasturing of cattle in the reserved and protected forests. A provision was also made to impose duty on timber. The Act of 1878 extended the policy of establishing total colonial control over forests.[7]

From all the colonial legislations, it was clear that commercial interests were the primary consideration in declaring forests reserved. The colonial Indian forests had been the central place of strategic raw materials crucial for imperial interest such as timber for shipbuilding, sleepers for the Railways, forest based industries such as pulp, paper and plywood.[8] With this background of the evolution of state propriety over forests in colonial India, an attempt is made hereunder to review the experience of such change and transformation with specific reference to Darjeeling Hills.

The forests in Darjeeling hills due to its distinctive climate, rainfall, soil, topography and other habitat factors gave birth to tropical rain forests to mountain temperate forests. When the entire Darjeeling forested tract was occupied by the East India Company through a Deed of Grant from the Raja of Sikkim in 1835, there had been no personal proprietary hold over the forested land. Darjeeling tract was not either predefined as Zamindari Khas (self-cultivated holdings) or did remain under Raiyati (occupancy of the cultivating tenants). Unlike plains of South Bengal, there had been the absence of Jungle Zamindars in Darjeeling. Agrarian changes and concomitant state making, material and ecological transformation that took place in Darjeeling under colonial control could only have been possible due to the total possession of British over the whole tract of land of Darjeeling covered with forests.[9]

In this Chapter, two principal points have been attempted to be explored: (i) In Darjeeling Hills, the scientific and technical discourse on forest had been shaped by the historical legacy of colonial knowledge building on forest; (ii) The forest development discourses had been continuously under production in specific political-ecological settings. It has been attempted to explain how the uniform forest policy of the British failed to work properly because of the regional socio-physical variations. That is why effective protection of forests and forest products required local people's knowledge and historic experiences to be utilized and given priority over imported forest management techniques.[10]

The British notion of Nature as indoctrinated in the mindscape of the colonial officials engaged initially in colonial Darjeeling was fundamentally different from the notion of Nature of the indigenous people who in fact lived in and lived with Nature. Unlike Europeans, forest to the indigenous people was their natural abode and means of subsistence and was certainly not a source of profit extraction. The debate on the issue of ownership/ entitlement of forests in India was

emerged only after the establishment of the Department of Forest. Such a debate has been well analyzed in three broad categories, the first of which they call “annexationist” implying absolute state control over forests. The second one is the “pragmatic” favouring arguably state management of ecologically sensitive and strategically valuable forests keeping apart the areas to remain under communal system of management. The third category as they termed “populist” refers to rejection of state intervention, holding that tribal and peasants must exercise sovereign rights over the woodlands.[11] However, none of these categories can be well founded when applied to colonial Darjeeling for the purpose of explanation.

The official correspondences of East India Company and thereafter those of the British India Government as the principal source of historiography of colonial Darjeeling would have us take the stand that it was not forests of Darjeeling Hills which attracted the preliminary attention of the British. Poor accessibility and high cost of transportation might have discouraged them from commercially exploiting the forest timber of the Tract. Therefore, the primary intention was to create a social space in the physical space of Darjeeling equitable to European environment wherein the Company officials would take refuge and would feel at home. The strategic location of Darjeeling as a military space had received adequate attention too. The ceded part of Kalimpong Hills(once owned by Sikkim) from Bhutan at a later years(1865) reapproves the argument that it was not forests but the consideration of strategic location prompted the British to annex the entirely forested hilly part of Kalimpong with the District of Darjeeling.

The British forester E.P. Stebbing informs us that the forest conservancy in Bengal was first initiated in British Sikkim. Forest conservancy began in Darjeeling in 1864 when Dr. T. Anderson was appointed temporarily as Conservator of Forests, Lower Provinces (which included Darjeeling Hilly Tract). The Forest Act of 1865 provided

impetus to the British local authority in Darjeeling.[12] Under the newly appointed Conservator, a hierarchical bureaucratic structure was established for the proper management and conservancy works. Till 1870, Darjeeling forest was kept under Bhagalpur Division. From 1870 to 1876, it was administered under Cooch – Behar Forest Division. In 1877, the Darjeeling Forest Division was established with three sub-Divisions such as Darjeeling, Teesta and Kurseong. In 1879, the Teesta Division was reconstituted as Kalimpong Division.[13] In all these three sub-divisions forest conservancy was initiated with the help of working plans having ten years in perspective. Since 1892, such working plans began to operate in all the Forest Divisions of Darjeeling with the help of a structured forest bureaucracy having enormous powers of discretion at its hand.

The most serious consequence of colonial forestry was the diminution of customary rights as well as the decline in traditional conservation and management systems.[14] The curtailment of communitarian ownership of forests of Darjeeling by the colonial state had severely undermined the subsistence economy of the indigenous Lepchas. Collection of Bamboos, Wax and Lac from the Darjeeling forest was prohibited by issuance of licenses. Like all other British India forests Jhuming or shifting cultivation was discouraged without providing appropriate alternative arrangement or land to the Lepchas for settled agriculture. As a consequence, there had been displacement of Lepchas from their natural forest land habitats. Restrictions on collection of forest produce imposition of prohibitionary norms on grazing and gradual dwindling of grazing grounds of different seasons affected badly the indigenous people of Darjeeling hills.[15] Nowhere in the British forest policy or in the colonial Acts, had the rights of the indigenous Lepchas been specifically mentioned? Ultimately Lepchas had to leave Reserved Forest of Darjeeling and they were instructed to move south-west part of the District, between the hilly tract and the plains. Again during 1920s, Lepcha tenants were evacuated and

resettled. For their resettlement due to expansion and construction of Kalimpong as an urban area, deforestation of 999 acres of forest land in Lolegaon Reserved Forest was proposed and sanction for such deforestation was granted by the colonial government. As a consequence the Lepchas became refugees in their own land.[16]

Prohibitory rules in the name forest conservancy, prohibitions on the use of forest resources and grazing were randomly imposed by the local forest government.[17] Rules relating Grazing were modified time and again in Darjeeling Forest Division from 1913 to 1925. All these put the indigenous Lepchas to an extremely pitiable condition and they were destined to be displaced.[18] The letter of A.A. Wace, Deputy Commissioner of Darjeeling, addressed to Commissioner of Rajshahi Division, bears the testimony of such plights. The letter reads, *"Anxious as I am to secure permanently the interest of Lepchas in this district, I cannot shut my eyes to the fact that, as they exist in our unsettled tract, they are an obstacle to all improvement cultivation or increase of revenue. They settle in a forest, clear a bit and sow it, and then pass on to cut down new forests, without giving in return for the valuable timbers destroyed. What we should aim at is to see them as they can afford to pay an easy rent for. As a regards the Lepchas on the tract under reference, I would give them the option of building on 15 to 20 acres each where they now are, securing their interests by giving them one of our Kalimpong Leases, or moving to the Lepcha blocks north of Kalimpong on payment by Planter of a liberal compensation for removal*".[19]

In response to the above official communication, the Government ordered the local authority at Darjeeling to take action. Accordingly, the Lepchas were driven to the Kalimpong range of the Hills. Ultimately, there was displacement time and again in the face of growing development area and Tea Plantation in that area. Lepchas were sent again to lower elevation of the Kalimpong tract where they lost both of their subsistence and livelihood. Lepcha resettlement issue in Darjeeling hills was left much to be desired. Lepcha displacement was

indeed caused by colonial capitalist development unknown to the indigenous people. Despite such displacement and destitution, the Lepchas could not go beyond memorandum, and submission of petitions.[20] The numerical stream of the Lepchas, demographic changes in the process of colonial state making in Darjeeling which made them minority, the social and economic incapacity of the indigenous people to raise voice against the over archaic colonial power structure, the omnipresence of British military installations are some of the fundamental historically corroborated reasons behind the absence of resistance and rebellion in Darjeeling hills during colonial phase. Although there had been the exertions of everyday forms of resistance, at least discontents were never brought to public surface. On the other the beginning of monetary economy and infusion of colonial capital in tea, forest policies forced Lepchas to change their traditional forest based lifestyle based on Jhum cultivation and natural forest produce.[21] The imperatives of colonial state making in Darjeeling were comparatively so large and huge that the small indigenous people were not at all in a position to intensify any resistance against the colonial order except in few cases of occasional negligible breaches of the forest law in some areas in the name of 'everyday form of resistance'

Precisely, the study has attempted to explore the interrelationship of regional, geographical, environmental, socio-economic and political and strategic factors in the development efforts of the British Government in shaping forests and making Darjeeling a location of importance. The study has attempted to demonstrate the lapses, failures, shortcomings, set-backs and successes in the colonial forest policies adopted in Darjeeling. The study has addressed the question whether there had been conflicts of interests between the colonizer and the colonized concerning environment and forest issues.

Alienation of Forest Land:

In 1862, cinchona found its way to Darjeeling for experimental purposes. Even though its cultivation was not as extensive as that of the tea, cinchona too contributed to alienation of forest land in Darjeeling hills. The first nurseries were tried at Senchal a place near the station of Darjeeling with the expectation that Cinchona, which was an equatorial crop might do well in that place with its over-wet climate. But contrary to the expectation, the Senchal experiment ultimately proved to be a failure and the plants were transferred to Lebong which too proved unsuitable. Finally a suitable location for a permanent plantation as found at Rungbee on a spur projecting from Senchal in a south-easternly direction. The plantation at Rungbee was gradually extended over the whole ridge lying between the Rungbee and the Tiyang valley. Between 1861 and 1869 the main preoccupation was with scientific and technical problems connected with the preparation and the after-care of the plants.[22]

The initial difficulties overcame, and a small harvest of bark began to come in from the year 1869-70. By the year 1875 there were about 2,000 acres of Government cinchona plantation. The total number of trees planted out between 1864 and 31st March 1875 amounted to 32,85,592.. In 1887 an area at Sittong on an adjoining ridge to the south of the Riyang valley was taken in. These two ridges now constituted the Mangpu plantation with total area of 12,000 acres and a standing crop of 4,000 acres.. Almost at the same time private estates were also started, and it was made possible through State encouragement. But the private enterprise did not however continue for long, due to a temporary slump in bark.[23]

In view of the failure of the private entrepreneurs in cinchona cultivation, the government pursued a policy of extended cultivation of cinchona as needed for the public welfare and in 1900, a new plantation was started in Munsong under the reserved forest. This

plantation then occupied a total of 6000 acres of forest land. In 1938 a third plantation was opened in the Rongo block of the Kalimpong Forest Division where it is expected to plant 1,600 acres of cinchona. A fourth plantation was started in the Latpanchar group of blocks in the Kurseong forest division.[24]

Most tea and cinchona plantations were established by clearing natural forests on land acquired or purchased from the Government of India. Whenever markets for tea and cinchona were strong enough to enable expansion of plantation acreage, great cover correspondingly got reduced. For many years, the tea planters held dominant financial and political leverage in Darjeeling and prevented the Forest department from gaining control over the wide forest area of the district. Higher ups in the forest department wanted to prevent greater alienation of forest areas to the tea planters as well as to those who indulged in land speculation. The large scale alienation of forest land for plantations and speculation as was indulged in at that point of time spoke of the great concern with which the forest department viewed the growth of the planters' interest in the district of Darjeeling.[25]

By the late nineteenth century, the forest department exerted complete control over the forest of Darjeeling. The period also witnessed an increase in the level of commercialization of the forest resources of Darjeeling. However, in the governance of forest administration and conservancy in Darjeeling, there was no departure from the main system of managing forests in Bengal.

Objectives of the Forest Department in Darjeeling:

The objectives of the forest department in Darjeeling since inception appeared as follows:

1. To secure all the commercially useful forests as rapidly as possible from further depletion, by having them gazetted and properly demarcated.

2. To enhance the revenue from the government forest by all authorized means, since the financial success of forest management is the only sound basis on which it can be permanently established and maintained.
3. To protect the areas to be maintained as forest from all that tends to interfere with their highest productiveness.
4. To ascertain by survey as soon as possible the nature and contents of each forest location accurately.
5. To divide the forests as much as practicable into well-defined and manageable divisions, ranges, and beats for systematic management.
6. To improve, by sowing and planting as much as the income may permit those forests in which expenditure on such work is most likely to prove remunerative.

These basic objectives of the Forest Department did not change in any significant way throughout the colonial period.[26]

The basic problems faced by the forest department of Darjeeling had been to deal with dense forests on moderately steep terrain in the Himalayas from 500 feet to 12,000 feet and consequent difficulties of extraction. Initially, there was no developed transport and communication system. Unhealthy climate, and scarcity of labour had augmented the problem. Initially the basic underdevelopment of the district and the limited revenue that was collected by the forest department was not sufficient for a large establishment causing hindrance for operation of forest conservancy.[27] The only way to overcome the problems was to maintain a small establishment to increase the revenue and, for decades together, that was always the motive of the Forest department. In addition to the problem of inadequacy of the establishment, there had been huge scarcity and high cost of labour, as well as the general unhealthiness of forests of Darjeeling. The labourers from other parts of the plains were not willing to come to the hills. The Nepalese were however an exception to

that as they were able to do forest related work. The difficulty of procuring labour used to be overcome only by paying higher wage.

The floating of timber from Darjeeling and Kurseong Forest Division was not possible as there was no river system. Only the timber from the Teesta Division was floated through the Teesta River to Siliguri and Jalpaiguri in the plains. The systematic exportation of the timber of other areas had to wait till the construction of Darjeeling Himalayan railway. The improvement of the transport and communication system later on helped in the exploitation of the commercially valued timber in the remote areas of the district. Despite problems and consequent hardship and initial imbalances, professional forest conservancy had steadily progressed in Darjeeling. Initially the forest establishments were limited according to income and the resources available at the disposal of the Forest Department. Thus, on account of the small revenue, and consequently limited forest establishment, the demarcation of 'reserve' could not be extended to all the divisions simultaneously. The report of the forest department in Bengal for the years 1873-74, together with a review thereof by Lieutenant-Governor gives evidence of steady progress in the systematic examination of the forests under the control of the forest department and in the demarcation of the reserves. Initially the forests in Darjeeling were placed under the Cooch Behar Forest Division. This area was stated to include the hill forests in the British Sikkim and 31 Square miles of Terai and lower hill forest, within which area is comprised the Mahanuddy Terai Forest with hill tract, adjoining the former to the north, with 10,240 acres.[28]

Establishment of colonial hegemony through 'Reserved' Forests

Rules for the better management and preservation of the Government Forests in the Lower Provinces of Bengal were drawn up under Act VII of 1865 which had been confirmed by the Viceroy and the Governor General in Council, and were in accordance with section 6 of

the Act, published in the Gazette of India. The government forest Act VII of 1665 was promulgated and under Section II of that Act a Notification dated the 13th July, 1865, was published in the Calcutta Gazette of 2nd August (page-1, 288), declaring certain tracts in Cooch Behar and Darjeeling forest under the said Act. Again, a Notification, dated the 23rd January was published, strictly reserving certain tracts of land in Sikkim Terai for forest purpose. These publications covered the whole of the area of Kurseong Division except such blocks which were subsequently added. Among those blocks added subsequently included Tukriajar and part of the Dalkajar and Mechi forests. These were purchased from the Government by the Forest Department. The Bamanpokri block was resumed for default of rent and the Pagalajhora block was originally acquired by the Public Works Department and subsequently handed over to the Forest Department. The draft of the amended Rules for the administration of the Government Forest in British Sikkim and Bhutan, prepared by the Board of Revenue in personal resolution with Conservator of forests were presented by T.B. Lane, Esq. Officiating Secretary to the Board of revenue Lower province to the Officiating Secretary to the Government of Bengal on 24th July 1865. These rules were drawn up under Act VII of 1865, had been published for the administration of the Government Forest in British Sikkim and Bhutan.[29]

According to these Rules the Government Forest in Darjeeling District comprised all lands covered with forest, brushwood and jungle, which are the property of the Government and within the tract bounded and limited in the following manner.[30]

1. All Forests situated at and above an elevation of 6000 feet above sea, including the cantonment lands of Senchal.
2. The Forest in the great Rangeet and Teesta Valleys to an elevation of 8000 feet above the sea.
3. The forests on the outer hills up to an elevation of 3,000 feet ad bounded by a line drawn along the base of the hills.

4. The forests of the Terai as defined on the map of the district, and demarcated by boundary pillars of the Forest department.

According to this rule no lands covered within the meaning of Act VII of 1865 were allowed to be sold or leased out except under the orders of the Commissioner of the District. Further passing an order Commissioner was required to communicate the matter to the Forest Department and in case of difference of opinion between him and forest department, it was to be referred to the government. According to section 1 sub-clause 4 of the above Act, all lands within this limit, not being reserved tract as per section 3, and not covered with Forest were allowed under the exclusive jurisdiction of the district Officers, and are not under the Forest Department. The Officers appointed under this rules for the administration of the forests were the Conservator of Forests, the Deputy and Assistant Conservators and the subordinate employees. Further, the administration of the government forest throughout the whole of the province was vested in the Conservator of Forests. Divisions and Sections were placed under the management of Deputy and Assistant Conservators.

The section II of the Rules for the administration of the government Forests in British Sikkim and Bhutan Forest devoted some attention for the general protection of forests and forest produce in the unsettled forest tracts. No person was permitted without the permission of the Conservator of forests to mark, cut, girdle or fell or in any way injure, any of the trees reserved or protected. On the Indian forest Act VII of 1878 superseding the Government Forest at of 1865, a fresh notification was issued under section 14 of the Act; more accurate description was given therein against each reserve. A reliable figure of area could not be found until a complete survey was made by the Survey of India in 1902. Rights were enquired into between the years 1890 and 1896, after which the Government of Bengal, in their letter No.996-T-R; of 29th October 1896, to the conservator of forests, approved of the proceeding of the forest settlement officer in regard to

the forest reserved under section 34 of the Act of 1878. This Act of 1878 remained in force till the passing of the government of India Act (Act xvi of 1927). Although the management of the forests in Darjeeling started in 1864, a well defined forest policy was promulgated only in the year 1894. All the regulations related to forests under the Indian forest Acts of 1865, and 1927. According to these regulations and rules, all reserved forests were placed directly under the charge of the Forest Department.

It was obvious that the British Government from the very beginning of forest administration was progressively increasing its hegemony over the forest resources of Darjeeling. The rights acquired by the government were absolute. Apart from the Acts and rules mentioned above, the British government also enacted rules for regulating the various other activities of the Forest Department which were framed from time to time in accordance with the relevant rulers of the Indian forest acts. Among them the Waste land sale rule of 2nd February 1874, Fire Protection rules, Darjeeling grazing Rule of October 1895 under section 75(d) of Indian Forest Act 1878, Cattle trespass Act of 1871, Rules to regulate hunting, shooting and flashing within reserved forest of 18 May 1895 and April 1907 deserves special mention. These rules will be dealt in details in the relevant parts of the present work.

Forest Settlement in Darjeeling District:

The proprietorship of the forest land at the time of British occupation varied in accordance with the historical and political development of the Darjeeling hill tract and its Terai part.[31] This condition of things was probably quite in accordance with the nature of society and polity previous to British occupation, when everyone was accustomed, without hindrance to get what he wanted from the forest, and when consequently no demand.[32] It soon became evident that if the prevailing state of affairs was allowed to continue unchecked, in the

same proportion as cultivation increased and forest was cleared, the government forest property would not only become valueless, but might also be diminished to such degree as to be incapable of supplying the demands of the tract. It was considered as the duty of the colonial government to secure.[33] In order to effect the required changes, it was necessary to legalise the settlement and the reservation of the forest areas as well as the assumption of the complete control.[34] Before British acquisition of Darjeeling, the Sikkim Raja from whom the British government occupied its forest property never recognized a prescriptive right.

The details of the settlement of forest sin Darjeeling are found in the Letter No.1449G dated Darjeeling, the 26th March 1896. This Letter was written by R.T. Greer, Esq; Deputy Commissioner of Darjeeling to the Commissioner of the Rajashahi Division.[35] The settlement of forest in the Darjeeling District to be declared reserved forest was made by a government notification dated the 4th February 1890.[36]

This notification reached the Deputy Commissioner's office only on 14th of March 1890. Under the above notification the Deputy Commissioner of Darjeeling was appointed as settlement officer to determine the relevance, nature and extent of any rights alleged or found to exist in the reserved forests of the Darjeeling civil district, comprising the Darjeeling, Teests and Kurseong Forest Divisions to expedite the settlement work which had been dragging on for about five years, and to bring it to completion before the end of forest year of 1895-96. The forest settlement officer had the power to enquire into the existence of any rights within the gazetted boundaries of the government reserved forest. A proclamation was duly issued in English, Lepcha, Bhutia, Nepali and Bengali under section 6 of the Act, on the 15th December 1891, giving time to prefer claims up to the 14th March 1892.[37]

After this proclamation numerous applications were filed. Altogether forty two claims were preferred. Out of these twenty one were related to the rights and the possession of lands, two for cattle stations and 19 for dispensation for houses and crops, fruit trees, etc. The claims for land and cattle stations were rejected. No claims were preferred in respect of the forests blocks noted below in Table:[38]

Table : Forest blocks for which no claims were preferred

Senchal	Loolagaon	Manjha	Bamonpokri	Choktong
Mahaldiram	Dhobijhora	Mechi	Lamazumba	Sibhok
Ging	Sibakhola	Balasun	Sukna	
Kill	Manjua	Dalkajhar	Mahanadi	
Dumsong	Kohein	Pantapari	Champasari	

Source: A letter from R.T. Greer, Esq. Deputy Commissioner Darjeeling to the Commissioner of the Rajshahi Division No.1449 G; dated Darjeeling, 26th March 1896.

The proceedings were carried out by the Deputy Commissioner, Mr. Ritchie, and his successor, Mr. Waller, Mr. Waller, on his transfer from the district, carried away the records in order to pass final orders. These records were received back in the Darjeeling office only on 13th September, 1893. Ultimately all such reports and documents were taken over by the Conservator of Forests, Bengal.[39]

The area under the control of the Forest Department of the district of Darjeeling was progressively increasing ever since the beginning of the Forest Department. The reserves in the Lower Province of Bengal at the close of 1873-74 consisted of 106 square miles in the Darjeeling and 14 square miles in the Jalpaiguri Division. In the corresponding year about 10.46 percent of the Reserved Forests of British India belonged to the province of Bengal. In the corresponding year about 10.46 percent of the Reserved Forest of Bengal was in Darjeeling. Rules for the administration of the Government Forests in the Lower Province of Bengal, drawn up under Act VII of 1865 had been

confirmed by the Viceroy and Governor General and were in accordance with section 6 of the Act, published of the Gazette of India. It was under the dynamic leadership of the new conservator, William Schlich that intensive activity in the formation of Reserve Forest began in Bengal. His successors like J.S. Gamble, (from 1872-1882) and A.L. Home (1882-1890) took forest reservation to a new height. So much so reserved forest area in Darjeeling District increased to 442 square miles. About 30 percent of the total geographical area of Darjeeling district was covered with reserved forests at that time.[40]

The increasing hold of the Forest Department in Darjeeling might be gauged from the extension of the area under the control of the Forest department and the government. There were three classes of forests in Darjeeling, viz. the reserved forests, protected forests and the tea garden forests. Tea garden forests were outside the strict control of the forest department. The extent of protected forests was very limited and they were confined to the Cantonment area of Jalapahar and Birch hill area in the Lebong spur. The Birch Hill Park was brought under the Bengal Public Park Act 1904, under Bengal government notification Nol.87M dated the 10th January 1916. This Act later extended to Lebong and two outlying areas of Ghum and Patlaybas. All these forest areas contained only 248.84 acres. But there was a doubt whether the Park Act could be properly be applied to them. The Forest Department was asked to address the matter to the Municipal Department after consulting the Commissioner of the Rajashahi Division.[41]

The area under Reserve increased steadily in Darjeeling especially in the last quarter of the 19th century. Thereafter, the increase or decrease of the reserve forest was nominal. The figure in the following table taken in random would testify the above statement.

Areas under the reserve forests taken in random order

Years	Darjeeling	Teesta	Kurseong	Total
	Area in sq. m.			
1881-82	40	221	90	351
1882-83	191.5	250	89.5	441
1887-88	102	250	87	439
1895-96	114	213	109	436
1923-24	110	209	112	434
1927-28	110	209	112	431
1938-39	111	210	112	432
1940-41	111	210	112	433

Source: Annual Progress Reports of Forest Administration in Bengal (Respective years)

There was sudden increase of forest reserve in Darjeeling Division in the year 1882. It was due to the purchase of 700 hundred acres of Gumpahar Forest from the Municipality of Darjeeling and 60 square miles of forest from descendants of Cheboo Lama in the Singalila Range. The total area added from these two sources was 64.5 square miles of forest on 22nd September 1882. There was also an increase in the Forest reserve in the Teesta Division because the forest on the right bank of the Teesta, south of the Riang River had been transferred from Kurseong Division.[42] It was done by a Government Notification of August 30th, 1881. Similarly, the Northern Tondu forest, which previously had been included in the Teesta Division transferred to Jalpaiguri Division. After this exclusion and addition the total forest area of Teesta Division remained at 161255 acres. The area of Kurseong Division had been reduced by 14,202 acres by the transfer to the Teesta Forest Division.[43] The decrease in the area of the forests under reserves was also mainly because of the transfer of the same to other uses. For example an area of 48 acres was included from the Dhobijhora Forest in the Kurseong Division and transferred to the Education Department, for the construction of a new Government school for boys at Dow Hill, by Notification No.2419 dated the 3rd July 1896. Similarly 500 acres had been excluded for the cultivation of tea

under notification No.3599; dated the 5th September 1896. Similarly Mal forest had been excluded for the cultivation of tea under notification No.3599, dated the 5th September, 1896.[44]

From the initial years, the Forest Department in Darjeeling provided protection to those forest areas which were sources of revenues. Protection of forests included the endeavour of the forest department to provide general protection to the forest areas from unauthorized felling, injury by forest fire, removal of saplings, illegal jhumming or unauthorized grazing. As early as 1880, the forest authority of Darjeeling contemplated the need to issue fixed rules and enforce them strictly to ensure to stop lopping branches and cutting saplings which the graziers adopted. The first comprehensive Grazing rules were enacted in the year 1880 for the Darjeeling Division. In the Kurseong Forest Division grazing was permitted in most of the forests, except during the season of jungle fires. In Teesta Division, grazing rules were framed in 1882-83 restricting grazing principally in upper hills.[45]

It was found in many forested zones of Darjeeling that a number of young Sal seedlings and poles die and disappear. The death of seedlings was due to weeds and over head shade. Accordingly, provisions were made to keep natural regeneration of Sal free from weeds and to give overhead lights. Climber cutting programmes were undertaken to save poles. Cutting of creepers and weeding also constituted an important component of the protection of forests.[46]

The Darjeeling Himalayan region is well known for its bio-diversity. From the point of view of fauna alone, it is unparalleled, representing a variety of planting a variety of interesting species, particularly the avifauna. The varied ecosystems distributed along different latitudinal and altitudinal limits include an immense variety of forest types and harbor a good representative flora and fauna of several biographic zones with their own unique biodiversity. The British official

records identified 80 to 90 types of mammals, 550 types of birds 125 types of fishes and approximately 51 types of snakes which constituted the fauna of Darjeeling forests.[47] Many of them are extinct or endangered species. This process of their extinction actually began with the British occupation of this region and with the clearing of forests for developmental purposes.

In spite of the existence of a comprehensive rule for the protection of wild life since 1912, available evidence points out that the Forest department was not serious about the reservation of wild life in Darjeeling forests. With the exception of a few cases reported by the forest department, no action had taken under the Act to protect wild animals in Darjeeling forests. Even after the notification of the rules for regulating hunting and shooting in 1912, requests came from the Noyce, Esq; Under Secretary to the Government of India to the government of Bengal in 1913, asking allotment of special areas of forest land near cantonment for British soldiers to shoot and hunt in the reserved forests of Darjeeling.[48]

Forest Villages and the Forest Department of Darjeeling:

For Darjeeling, forest villages in suitable situations were artificially established in suitable locations where foresters felt acute labour shortages. The availability of labour had to be ensured for forest conservancy works in the face that the native Lepchas were unwilling to do any work unknown to them and under the control of the foresters. Moreover, during the tea season when plucking of the tea leaves used to be in progress, it was very difficult to obtain any labour at all. The establishment of Forest villages was thought to be a way out to solve the labour crisis

All the three divisions had some such villages by 1911-12. Forest village was an administrative term that refers to village situated inside the reserved forest and under the administration of the forest department. After the forest was reserved, some people were allowed to

stay on in exchange for their services to the Forest Department. Gradually, this agreement was turned into a formal contract that provided privileges (not rights) and duties of the forest labourers.[49]

Forest villages were designed for the purpose of supplying a source of suitable local labour or in the case of temporary cultivation, with a view to restocking the areas so cleared and cultivated with valuable species of trees on the taungya method. Accordingly forest villages were established within the limit of any reserved forest on sites where felling series or cutting sections in those working circle in which the regeneration by planting or by natural areas was aided by intensive weeding. Forest villages were also established for protection and other works. Forest villages were classified into two forms such as permanent and temporary. The temporary villages were shifted according to the needs of the forest department and the area of forest operations. Forest villagers employed in forest operation works on payment. The works include climber cutting, plantation, nursery works, repairing of forest roads, bridges, fire line clearing, extinguishing accidental fires, making coups and such other related works. The permanent forest villagers occasionally provided free labour for the creation of plantation and other works, in return, they were permitted to grow field crops on the areas planted and also graze their cattle and collect woods and thatch for the purpose of domestic fuel without payment.[50]

Conservation Measures in Darjeeling

The principal purpose of the forest department in Darjeeling was the production of large and sound, and commercially valuable timber. Therefore, silvicultural operations were given primary importance. Silviculture is a package of inputs applied to the forest crop throughout its life with an objective of giving the forest a predefined character. The selection of Silvicultural system for any type of forests necessitates consideration of certain factors. Such factors in most of the cases were unique for Darjeeling forests. The factors are: condition of regeneration

and growth in the forests; nature of terrain and soil; protection consideration; nature of forest produce and ecological services required; economic consideration and such other related social and climatic factors. In fact, several silvicultural systems practiced in Europe were adopted in Darjeeling forests with little modifications. The systems which were adopted in Darjeeling district forests were clearing – felling system, selection system, shelter wood system or uniform system and coppice system.[51]

The study of various Working Plans in all the divisions reveals that no particular system was adopted in any one Forest Division or Range. The general objects of forest management in Darjeeling district forests were firstly to maintain a sustained supply of timber, fuel, fodder; etc. to meet the local demands. Secondly to increase the production of valuable timber by converting the present irregular forests which were poorly stocked and over-mature into a regular forests fully stocked with valuable timber trees and finally to maintain protective forests wherever necessary to check soil erosion and land slip or to regulate water supply.

Evolution of Working Plan in Darjeeling District Forests:

The first regular working plan for the forests of Darjeeling Division was prepared by Mr. H. Mansion. It came into effect from the year 1892-93.[52] This plan along with its revision had continued for twenty years. The first Working Plan for Singalila forest was compiled by Mr. Trafford in 1908 and its prescription followed more or less those of Mr. Manson's Plan. Mr. Grieve's Plan was introduced in 1912 mainly with the motive of avoiding the second felling which had, in so many cases, destroyed the regeneration established after the first felling. His plan excluded altogether from his scheme all open areas to grazing as being unworkable, he then put all areas previously regenerated under Mr. Manson's and Osmaston's plans into a separate plantation working circle. He then divided what remained into a high forests and a Coppice

Working Circle. The Coppice Working Circle was to be worked on a 30 years rotation, for the supply of fire wood to tea gardens. For the High Forests Mr. Grieves original intention was to prescribe the selection system on a rotation of 150 years with a 25 years felling cycle. It was determined by the number of trees in a working circle. During the felling cycle one half of the first class trees were removed in groups. It was also supplemented by planting where necessary. Grieve's plan was followed by Baker's plan.[53]

Baker's plan of 1921 was based on the realization that the natural regeneration was too slow, uncertain and insufficient in quantity and could not be relied upon as a method of generating the forests after exploitation. The Long Rotation Working circle included forests to be worked in production of timber and short rotation working circle included areas conveniently wanted on the Hill Cart road and the Ghum-Sukiapokri cart road for the supply of fire wood in Darjeeling, and an area in Hum and Linding for the supply of Takdah Cantonment.[54] The rotation fixed was 125 years for the long Rotation working circle and 60 to 40 for the short rotation circle. The rotation of 125 years in the long rotation working circle was divided in a five periods. The first period was deemed to have started from 1912 the prescriptions of this plan were carried out almost in full in all felling series except Batasi. Baker's Plan was succeeded by Chaudhuri's plan.[55]

Chaudhuri's plan was prepared for the period 1929-30 to 1936-37. This plan provided for the continuation of the clear felling and artificial regeneration system in all accessible areas kept in the bulk of the Teesta valley and Rangit valley forest where the main prescription was selection felling. One feature of the plan was the formation of a Cryptomeria Working rule, confined to part of the ridges in the Ghum Simana Range, Tapkedara block, and the eastern end of the Lopchu spur. The rotation as fixed at 60 years except Lopchu and ending where it was only 40 years. Macalpine's plan was the last plan of the study

period which lasted from 1940-41 to 1959-60.[56] The plan of Macalpine provided for clear felling in strips along the contour with artificial generation and provided for short rotation, long rotation and other working circles. The plan provided for clear felling in sal and miscellaneous forests in Teesta valley range and also in the remaining areas below 8500 feet in Tonglu and Singalila ranges.[57] But these two ranges could not be worked as expected due to remoteness and lack of communication.

Working Plans of Teesta Forest Division:

Prior to the introduction of regular working plan, only the Sal bearing forests between the Teesta and Lethi rivers were worked under the permit system. The felling was unregulated and resulted in full sized trees being left only in inaccessible places. Other areas remained practically un-worked. The first scheme for working these forests were made by Sir Dietrich Brandis in 1880 when these forests were included the forests of Darjeeling Division. According to the suggestion of Brandis from 1886-87 to 1890-91, only a few trees were removed from the east bank of the Teesta under the selection system. Mature trees above 7 feet in girth at 4 feet from the ground were marked and purchasers paid a fixed sum per tree according to girth.[58]

The first regular working plan for this division was devised by Mr. French for the years 1905. It principally dealt with Sal bearing areas which were divided into 2 working circles viz. the Teesta Working Circle comprising the Sal forests along the Teesta north of the Mongpong block, and Chel Working Circle consisting of the Sal forests between the Teesta and Lethi rivers. Here Selection felling were prescribed on a cycle of 10 years, each working circle were divided into 10 annual coups, each containing roughly one-tenth of the sal bearing area in the Working Circle.[59]

The second working plan of this division is popularly known as the Thinne plan (1906-1920). This plan divided the whole division into

6 working circles, viz. Teesta, Chel, Lish, Neora, Jaldhaka and Pankasari. Sal forests in Kalimpong and Chel Ranges were proposed for working under Selection Felling with a felling cycle of 15 years. In Neora and Jaldhaka Ranges, coppice system with a 20 years rotation supplemented by artificial regeneration was prescribed. In the Jaldhaka and Pankasari ranges forests were open for the felling of exploitable trees by selection at any time. As a result there was over cutting in the more inaccessible localities where there was demand.[60]

The third working plan of this division aimed at the conversion of implementing irregular forests into a regular forest with clear felling followed by regeneration by taungya wherever possible. The whole forest division was divided into eight working circles. (i) the lower Hill Uniform Working Circle consisting of the Sal bearing areas suitable for taungya. (ii) the Sal selection working circle covering the remaining Sal rating areas, (iii) the Miscellaneous Selection Working Circle consisting of the Lower hill forests which do not contain Sal, (iv) the Kalimpong fuel Working Circle covering those areas in the Pankasari Range nearest to Kalimpong, (v) the Upper Hill Timber working role comprising the remaining workable portions of the Pankasari Range, (vi) The Tea Garden Long Rotation Working Circle covering the flat area in the East Nar and Khumani forests in the Jaldhaka Range where the demand for fuel was small, (vii) the Tea garden sort rotation Working Circle comprising the flat area in the Chel and Neora ranges where to demand for fuel was heavy, and (viii) the protection and unworkable Circle comprising to inaccessible areas in the Division.[61]

Even though the third working plan was devised for a period of twenty years, it had to be revised in 1934 due to following reasons. Firstly, the cultivable areas in the Kalimpong range which form the Lower Hill uniform Working Circle were under-estimated; secondly the lower Hill Uniform, the sal selection and Miscellaneous Selection Working Circle in the Chel range were thoroughly intermixed and could not be verifiable on the ground; thirdly, the annual yield in the Sal

selection working circle was based on the total number of Sal enumerated which calculated the Sal standing in the miscellaneous working Cirlce. Finally, in the tea garden working circle felling were carried out where the demand was greater to the supply, but the subsequent restocking was done in most areas with valuable rates like Champ, Panisaj, Chickrassi and Malagiri which required 60 years to reach the exploitable size. This necessitated a rewriting of the plan midway.[62]

The fourth working plan began in 1934-35 for the next ten years. It is also known as the Pal's plan. In this plan, clear feeling by artificial regeneration by taungya was prescribed with a 60 years rotation for growing soft-wood in teesta working circle and for tea gardens, long rotation working circle with a rotation of 10 years was prescribed. Besides this after growing miscellaneous hill species was prescribed with a rotation of 100 years for upper hill areas.[63] After the completion of this plan were was a break in the plan period and the next plan began only in 1947-48 which mainly followed the salient features of the fourth plan.

Working Plan for Kurseong Forest Division:

About the time of reservation of this forest in 1865, the government granted a monopoly right to one Mr. Dear for working the forests for supply for railway sleepers. This grant of right was stopped in 1867 when it was found that most of the sound big Sal trees were extracted from the plain forests. About 1870 the Government of Bengal laid down that no trees should be felled except by the direct agency of the forest department. Subsequently removal of Sal trees on the basis of exploitable girth limit on permit at a fixed price per tree under the supervision of a responsible forest officer was introduced. This system could not be properly supervised for shortage of staff.[64]

In 1882 Mr. Gamble prepared a working scheme for the Sukna Working Circle[65] which comprised of few blocks namely Champta,

Adalpur, Kyananuka, Rungdong, Sukna, and few small blocks. His scheme prescribed small thinning improvement thinning and selection of trees along with cultural operations such as freeing the plant from climbers and artificially working blanks. The yield was fixed by volume combined with area, except for the section feeling for which yield was determined by the number of trees with an area check. His scheme of gamble worked for seven years with certain modifications consequently on the realization that the yield had been fixed too high and was abandoned in 1890.[66]

From 1902 the forests of Kurseong Division were worked out under Mr. Hatt's Plan which prescribed Selection-felling and improvement felling to be done simultaneously in a fixed annual coup. There was one felling series in the terai forests. The felling cycle adopted was 15 years, being the half the period required by a second class tree to become first class. The yield was determined by number of trees. For this purpose, enumeration of all Sal trees over 1 foot 6 inches to 2 feet diameter or second class and over 2 feet diameter or first class. During the felling cycle one-half of the first class and one fourth of the second class trees were prescribed for removal. In the selection feeling all first class and the unsound and ill grown second class trees were to be removed in the first instance; second class trees might be removed by thinning if required to make up the yield.[67]

The last plan of this forest division toward the end of the study period of the present work was the Datta's plan for the years 1926 to 1946. This plan for the forests of this division including the upper hill forest was drawn up with the object of converting the irregular forests into a normal forests of valuable species arranged in compact block to facilitate extraction. In order to provide different treatment for the various types of forest, seven working circles were formed in the following manner (1) Plain Sal, (2) Hill Sal, (3) Miscellaneous, (4) Riverain, (5) a forestation, (6) protection, (7) undeveloped. Under this plan, in all plain forests clear felling followed by artificial regeneration

was prescribed. Yield was prescribed by area-cum volume. There was provision for selection filling and improvement felling. The exploitable girth for selection felling was fixed at seven feet for sal, eight feet for Champ, Panisaj, Gamar, Toon, Chikkrassi and Mandana and 6 feet 4 inches for all other species. The rotation was fixed at 80 years for sal working circle and at about 60 years for miscellaneous working circle. In Kundong, Punding and Bamanpokri blocks experiment by controlled burning to induce natural regeneration of Sal was prescribed. For Revarine working circle selection with improvement felling was prescribed. The exploitable girth fixed for Kahir 3 feet and for Sissu 6 feet 4 inches. A feeling cycle for five years was fixed and yield was regulated by volume.[68]

The British forest policy basically served to bring the forest resources of the district under imperial use. The laws and regulations which were promulgated and implemented in the district served to provide legitimacy to the exploitative operations of the Forest Department. There were several steps taken by the government and the Forest Department to increase the yield of the forests of Darjeeling. The Forest Department in colonial Darjeeling engaged a lot of its energy and effort to protect and regenerate the commercially valuable species.

Commercialisation of Darjeeling Forest and Environmental Degradation

The process of commercialization began with the colonial penetration into the forests of Darjeeling. The principal purpose of the colonial government was to extract maximum revenue out of forest produce, particularly in respect of major produce. Darjeeling being the first forest tract to be reserved in Bengal, it experienced heavily the colonial plunder. The colonial forest regime in Darjeeling in between the years from 1864-1947 can be summed up into three main stages, namely, initial stage; advanced stage and more advanced stage of commercialization. At the initial stage, forest products were subjected

only to marginal processing like cutting and shaping of timber for different local purposes including meeting demands of railway sleepers, etc,. With the growing demand for specified timber of colonial economy, the need for a systematic management of forests began to be felt both to regulate local use and to encourage regeneration of commercially more valuable forest produce. Initially, the felling operations were operated by private parties. In 1870-71, the Government made rules whereby no tree should be felled except by the direct agency of the Forest Department. This became the genesis of departmental operation. However, H. Leeds, Conservator of Forests, Bengal Lower Province, did not agree with the government on the ground of poor personnel arrangement for undertaking huge felling operation which would result poor generation of revenues. Leeds sent his views to Government.[69] The Government, in response, allowed the adoption of the permit system in Darjeeling forests. However, the contractors having permits had made serious inroads into forests in as much as they felled even small trees in disregard of the girth limit rules. To prevent such random felling forest areas were identified for supplying wood and fuel for different areas and sectors. For Darjeeling supply, Jalapahar area of forest was identified which include Rangu, Senchal,Rangirum, Dawipani, Rangio, Tiger Hill and Rangbu. For Kurseong supply, the forests of Sepoydhura, Mamrim and Sureli were identified.Forest areas of Chattackpore, Poomong, Hoom, Takdah, Balasan, Chongtong, Parmagiri, Palengdong, Pagrainbong andRongbong were earmarked for Railway and Tea plantation supplies. Sureli and Rishap forests were identified for supply to Cinchona plantation.[70]

The initial years of the twentieth century heralded advanced stage of commercialization of Darjeeling forest resources replacing merchant capitalism by industrial capitalism. At the turn of twentieth century, British India was on the threshold of considerable industrial expansion. The Forest Department of Darjeeling had started responding to the needs of industrial economy. Forests had been the repository of

raw products vital to the industrial needs. Darjeeling foresters evolved new methods of marketing the forest resources by becoming a part of larger industrial expansion. As early as 1910, the then Conservator of Bengal, F.Trafford had a consultation with Mr. Summonds, an agent of Messrs. Burns and Company for leasing certain areas of forests of of Darjeeling, Kurseong and Kalimpong for the extraction of pulp from bamboo. The Government responded positively to the proposal of the conservator.[71]

In a letter No.608F-3-9, dated 15th August, 1912, the agreement was approved by the Governor General in Council.[72] According to the Agreement, Burns and Company were allowed to extract timber and bamboo in Singalila Range and Teesta Valley Range in Darjeeling Division, Chel Jaldaka and Punkasari Range in Kalimpong Division and Sukna Range in Kurseong Division. During the same year, C.E. Muriel Esq., the Conservator of Forests of Bengal, executed an agreement with a big match and tea box factory for the extraction of timber from Singallila Range and other parts of Darjeeling, Teesta and Kurseong Divisions.[73] In the year, another important event took place when Forest Department of Darjeeling entered into an agreement with Mr. Grazebrook, Chairman, Darjeeling Himalayan Railway Company for the extraction of 1500 Sal trees from the Rinkinpong Block in the Teesta Forest Division.[74] The Company asked for an extension period up to February for such extraction but was denied principally due to World war urgency.[75]

On war footing the Forest Department of India was called upon to take part in the First World War[76] and Darjeeling Forest was no exception. The Forest Department was instructed to supply required timber and such other forest produce to the military authorities. The quantum of timber and fuel wood extracted from Darjeeling district forests during the First World War, 1914-1919 may be found in the Annual Administrative Reports of the respective years. For example, 1081443 c.ft. Timbers, 4831214 c.ft. Fire Woods, and 5912657 c.ft.

T&F Woods had been extracted. The Forest Department realized the need for expansion and enrichment of forest resources to cope with the enhancing demands of the larger sector of industrial economy and introduced mechanization in the extraction of forest resources and had developed strong and effective transportation system. As a result, mechanized logging methods were introduced by Mr. Shebbeare, the then Consedvator of Forests and Houlding, a forest Engineer in kurseong in 1922 on account of shortages of labour for toungya work and exploitation operation. The mechanized logging operation made logging cheaper and the returns higher. Saw mills were started in different divisions of the District.[77]

The introduction of new technology and improved mechanization in extraction and generation of forest resources had ushered in more advanced level of commercialization of forests in Darjeeling. For example, at Sukna in Kurseong Division, a high lead yarning was introduced for hauling logs from tree stumps to the railway line. Through this method huge Sal logs could be handled by the machinery. Portable circular saw mill operated through portable steam engine were put in operation. The mechanized logging operation made logging cheaper and the returns higher. At Tung, in Kurseong Division, logs were hauled up to the road side, both from uphill and downhill by means of an American steam logging engine with main and rehaul cable set up at convenient places along the road. The logging engine was mounted on skids and could haul itself from one position to another under its own steam. The logs dumped along the road were then transported by bullock carts to the American portable saw mill, for their conversion.[78] The sawn timber was then hauled down hill over a distance of 1067 meters, through an Ariel Rope Way to the depot along Darjeeling cart road. In fact, construction of rope way had been a modern innovation in Darjeeling forests. Inaccessible forests areas were accessed through rope way transportation. Primarily two rope ways were approved for Takdah, Chattakpur and Nagri. To ease the timber

transportation, a Rope Way Company was formed in 1928 between the town of Kalimpong and Darjeeling-Himalayan railway in the Teesta valley. This rope way connected the Railway at Rilli with Nazeok, Kamesi and Kalimpong.

During the Second World War, the demands made on the forests of Darjeeling were of much greater magnitude than the demands during the First World War. Timber and Fire Woods were extracted from all the Divisions of Darjeeling, From Darjeeling Division, during 1940-45, timbers of 1044334 c.ft., fire woods of 9055576 c.ft., T&F wood of 10119890 c.ft. were extracted, For Kurseong, 2704600 c.ft. Timber, 485100 c.ft.Fire Wood and 7555600 c.ft T&F Wood were extracted. For Teesta Division, the quantum was for Timber 1471334 c.ft, 7014800 c.ft. forFire Wood and 8486134 c.ft. of T&F Wood were extracted.[79]

This huge quantum of extraction of forest resources had adverse ecological and socio-economic implications for Darjeeling. Excepting few initial years, the Forest Department of Darjeeling had always remained as revenue surplus department. The revenue used to be collected from major produce, minor produce and from the miscellaneous heads. Timber remained the chief component of the revenue. Revenues were collected also from the sale of charcoal, cane, bamboo, fodder grass, grazing fees and etc. Thus the basic objective of realizing maximum profit out of Darjeeling forests was fulfilled. Expansions of commercial tea plantations in Darjeeling at the cost of forest lands, waste lands, grazing lands and bush lands had caused heavy harms to the entire natural ecological balance due to rapid depletion of forests. The natural flora and fauna were largely disturbed and had been rapidly extincting. Construction of railways and roadways were made by clearing forest areas. Large quantity of timbers for making railway sleepers caused rapid clearance of forests. The emergence of forest based industries, construction works of Public Works Department and private contractors, growing local needs for fuel, fodder due to rise of population, huge quantum of requirements of

forest resources both during the First and Second World Wars, rampant corruptions in the forest department, unholy nexus between the tea planters, revenue officials and forest officials to extract forest resources had been the major factors contributing to depletion of the forest cover in Darjeeling and thereby, to the degradation of this ecologically most fragile region.

Another important most issue was that far from applying themselves to an understanding of the complexities of the forest ecosystem, colonial foresters were under considerable pressure to immediately change the species composition of the Darjeeling forests in favour of commercially viable and valuable trees. From the very beginning, the foresters gave priority to those valuable trees and concentrated on regenerating them through artificial cultivation. Monocultural plantations were thus initiated that soon replaced the natural forests of the district that highly affected the flora and fauna of the district. Such preferential treatment to some tree species over the other natural tree species had disturbed largely the natural bio-diversity of the Darjeeling forests. Throughout the colonial period, in all the forest divisions of the district, unscientific extraction of trees was carried out either by the private permit holders or by the direct departmental operations. Due to such large scale fellings, climbers and weed used to grow causing natural disturbances to the growth of new trees. At the same time, the indigenous fauna had been largely affected by the rapid clearance of forests. The Rules provided by the Act of 1878 and subsequent rules for the protection of wild life (1912) had never been put into force by the Darjeeling foresters. On the contrary, the foresters afforded facilities for shooting at reasonable rates. For example, rights to catch elephants were leased out to individuals on payment at a fixed amount. The rapid clearance of forest caused change in the habitats of various animals and birds and ultimately led to their extinction. It has been observed from the colonial forest documents that no serious effort was given by the forest officials for the

protection of wild life as they did for the other forest resources for their immediate gains.

Unquestionably, rapid deforestation along with high intensity rainstorm accelerated soil erosion, mass movement of the exposed soil in the upper catchment and massive flood in the lower plains of the catchment area.[80] In 1918, Rakti and Chel rivers broke out a new channel into Ghish and caused immence damage to the cultivation in the plains. Lands were silted over by the rivers Chel and Ghish combined and the Bengal Duars Railway embarkment had been swept away close to Udlabari.[81] In fact, quarrying on the Himalayan immature geology triggered the disaster, huge and complex, never encountered before the colonial advent.

Earthquake induced landslides had been a compelling issue on the question of land degradation during colonial period. Although landslides prior to 1899 were not recorded, Joseph Hooker mentioned such scars in his memoirs in 1854. On 24th and 25th September, 1899, due to unprecedented rains, Darjeeling was badly damaged and nearly 219 persons had been perished under the falling debris or land slip.[82] On the issue of soil erosion, the Divisional Forest Officer, Darjeeling observed:

> *Apart from supplying local needs for forest produce, the forests in Darjeeling hills have a very great indirect effect on the people of lower Bengal. No year passes without land slip occurring to a greater or smaller extent in these hills… Though the wood-cutter on the hills hardly realizes the effect of felling trees and laying bara the hill slopes, the people hundreds of miles below suffer hardship. It is a great pity that the indirect effect of the existence of forests was not appreciated in olden days and instead of creating reserves on the hills tops and laying bare the whole hill down below, a more even distribution of the forest was not aimed at to prevent soil erosion and its deleterious effect on the rivers of*

Bengal. The real measure of the importance of the hill forests should always be in terms of their effect on water supply to the springs and on their prevention of soil erosion.[83]

A Committee was appointed in the year 1910 to investigate the mischief caused by deforestation in Darjeeling to suggest remedial measures too.[84] Darjeeling Safety Committee submitted its detailed recommendations in June, 1911. Some of the recommendations were: (a) to reforest those locations of the hill-side which have slipped or likely to slip; (b) to prohibit rice cultivation on any but the easiest slopes; (c) to prohibit cardamom growing as much as possible practically everywhere; (d) to restrict grazing on steep and unprotected slopes; (e) to reserve a protective belt of land along the banks of all main streams to a width varying with the size of the stream.

The Commissioner of Bhagalpur Division was asked to furnish his opinion on the recommendations made by the Darjeeling Safety Committee. The Commissioner was further asked to consider the question of how far the remedies proposed were politically, administratively and economically viable and by what means the necessary regulation could be imposed upon the holders of different classes of property in the District of Darjeeling.[85] In his response, the Dy. Commissioner urged upon that any practical scheme for applying remedies for deforestation, etc, must be necessarily be framed with reference to the conditions and of the ownership and tenure of land prevailing in the area concerned. Finally a Draft Bill was pioleted in the Bengal Legislative Assembly. A copy of the proposed Act, together with a request to express opinion on its provisions was sent to the prominent citizens of Darjeeling.[86] Despite differences of opinion on the various provisions of the proposed Act, ultimately, the Darjeeling Hill-Sides and Rivers Conservation Bill received sanction of the Government of India in 1917. But the principal provisions of the act were never implemented due to counter pressure of conflicting interests of different stake holders having tremendous influence.

As a result plundering of forests of Darjeeling without paying heed to the ecological consequences went unabated throughout the colonial period. The question of forest policy as pursued by the colonial Government had been largely contested. At the one end, the colonial forest policy has been criticized as profoundly statist, productionist and revenue earning motif; on the other, the colonial scientific forest policy has been praiseworthy on the ground that such policy restricted the unrestricted timber felling by the local traders, forest dwellers and mafias. The argument of William Beinart and Lotte Hughes is well matched with the experience of colonial forestry in Darjeeling to understand the intricacies of such contestations. In their exploration of environmental change in the British Empire, they argue that the "crafting of specifically imperial environmental relationship was crucial. The empire acted to, on the one hand, pursued the exploitation of natural environments by commoditization and, on the other, sought to practice restraint on consumption through environmental regulation. Thus the twin attempt to commodity and regulate nature gave the empire a peculiar character and unity. That is, exploring the linked themes of exploitation and conservation."[87]

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