SELLING RAILWAY SLEEPERS: "EFFICIENT EXPLOITATION" OF TARAI FORESTS AFTER THE FIRST WORLD WAR

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Abstract

During the First World War, the state of sleepers supply to the British Indian Railway Companies became critical. In this context, the Railway Board of India approached the Nepal government expressing interest in the extraction of sleepers from the sal forests in the Sarda Valley. Nepal had already been exporting and selling logs and sleepers to British Indian railway companies and gun carriage factories since the late 19th century and the outturn had started to go up in the first decade of the 20th century. However, officials of the Imperial Forest Service were not directly involved in the extraction of forest resources in Nepal until 1918. Using archival materials related to sleeper extraction and export from the Tarai forests in the 1920s and later, this study shows how forests emerged as key a site of Nepal's incorporation into the regional economic processes under the aegis of British imperialism and capital. I focus on the extraction, management, and marketing of sleepers under the supervision of experts from British India who were trained in the science of forestry and contextualize the origin of "scientific forest management" in Nepal.

Keywords: forests, sleepers, Tarai, extraction, forestry, railways

Introduction

As the First World War was raging on, the situation of sleepers supply to British Indian Railway Companies like the Oudh and Rohilkhand Railway (O. & R. Ry.) became acute. There was a heavy demand for broad gauge sleepers overseas because of the war and this resulted in a severe shortage of sleepers required for railways in India. Even in India, contractors were failing to supply a full number of sleepers as contracted. For instance, Bengal

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Nagpur Railway was under contract to give the O. & R. Ry. 45,000 sal sleepers from the Central Provinces (C.P.) but eventually, it was only able to deliver 21,000 sleepers.[1] Other contractors also failed to deliver full numbers.

The railway companies were looking for a fresh field of supply to meet their burgeoning demands for sleepers. In this context, Chief Engineer of the O. & R. Ry., F.J. Harvey notes that based on "the information received," he understood there were plenty of trees from which first class broad gauge sleepers could be turned out in the Sarda Valley in the Nepali territory (in today's Kanchanpur District).[2] The officer was aware that without the supervision of a Conservator of Forests, the Nepal government would not be able to export a larger quantity of broad gauge sleepers than what existed at present. At the time, the Nepal government was very selective, if at all, when it came to allowing Europeans to enter its territory. But the trees in the Sarda Valley were said to be immense and the British authorities did not want to miss a solid alternative to bolster the war effort. In this context, the Railway Board of India approached the Nepal Darbar expressing interest in the extraction of sleepers from the "excellent sal forests" that existed in the Sarda Valley.[3] Notably, Nepal had already been exporting and selling logs and sleepers to British Indian railway companies and gun carriage factories since the late 19th century and the outturn had started to go up in the first decade of the 20th century. However, officials of the Imperial Forest Service were not directly involved in the extraction of forest resources in Nepal until 1918.[4] Using archival materials related to sleeper extraction and export from the Tarai forests in the 1920s and later, this study argues that forests emerged as key a site of Nepal's incorporation into the regional

[1] Copy of a letter from F. Furnival to F.A. Hadow dated 26 November 1918, Railway Department (Railway Board), Projects-A, Notes, File No. 878-p-16/1-36, 1919, National Archives of India, New Delhi (hereafter NAI), p. 6.

[2] Copy of a letter from F.J. Harvey to F.D. Couchman dated 30 January 1918, Railway Department (Railway Board), Stores, June 1918, File No. 112S-18 B/1-2, 1918, NAI, p. 1.

[3] The Railway Board was established in 1905 to provide executive leadership to the vast and complex Indian railroad system (Kerr 2007: 68). The Railway Board replaced the Railway Branch of the Public Works Department and was given enhanced powers to practice integrated cooperation in the emerging national rail system.

[4] I look at this early history of logging, sleepers processing and export in a different chapter of my dissertation. Sen (1977, 1991) discusses timber trade in the 19th century.

economic processes under the aegis of British imperialism and capital. It also demonstrates how extraction, management, and marketing of sleepers under the supervision of experts from British India who were trained in the science of forestry anticipate the developmental practices and movements of transnational experts in Nepal after the Second World War (Hodge 2007).

This article is divided into seven sections. In the next section, I examine some of the theoretical approaches that help us to make sense of timber extraction in Nepal Tarai in the context of British imperial and capitalist interests, and the relationship of the Rana state to the forest of Tarai. The third and fourth sections examine the beginning and early work on timber extraction in the Sarda Valley. The section that follows looks at the extraction of timber from other forests of Tarai in the 1920s, the pricing of Nepali sal sleepers, and the extension of logging activities in Tarai. The sixth section examines concerns regarding conservation and scientific forestry. The conclusion then looks at the impacts of timber extraction in the making of the Rana state and the ecological underpinnings of the relationship between British India and Nepal.

Theorizing and Contextualizing Timber Extraction in Tarai

The Rana state is often characterized as an extractive state preoccupied with order and labor, resources, and rent extraction (Regmi 1984, 1988).[5] This section looks at some of the approaches useful to understand natural resource extraction and the nature of extractive states that also allow us to contextualize timber extraction in the Tarai during the interwar period. Extractivism is seen as "a nonreciprocal, dominance-based relationship with the earth, purely of taking." The extractivist logic is not concerned with regeneration and continuity, and reduces "life into objects for use of others, giving them no integrity or value of their own" (Klein 2014: 169). An extractivist approach towards natural resources also leads to the reduction of human beings into labor to be exploited or a burden to be controlled if not eliminated. Extractivism works by creating what Klein calls "sacrifice zones"—"places that, to their extractors, somehow don't count and therefore can be poisoned, drained, or otherwise destroyed, for the supposed greater good of economic progress" (Klein 2014: 169). This logic is central to

[5] See Mishra (1985) and Raj (2014) for critical assessments of Regmi's writings on Nepali economic history.

imperialist policies where peripheries of global capitalism can be bled dry to enrich the center. Sacrifice zones are also typically racialized territories, that is, inhabited by racial and ethnic minorities. I argue that Nepal Tarai, and especially densely forested western sections restored to Nepal in 1860 emerged as a kind of sacrifice zone for the Ranas and also to British India.

Resource extraction as a process of capital accumulation through violent dispossession is a central theme in Marxian critiques of capitalist and/or imperialist political economies. Rosa Luxemburg notes the impossibility of significant wealth accumulation within exclusively capitalist market relations. Therefore, to supercharge accumulation, capital is driven to "expand into non-capitalist strata and nations, ruin artisans and peasantry, proletarianize the intermediate state, the politics of colonialism, the politics of 'opening up' and the export of capital" (Luxemburg 1972: 145) The opening up of Tarai sal forests, therefore, must be seen in light of the global expansion of capital and the problem of accumulation especially during the crisis created by the First World War. More recently, David Harvey has theorized how various mechanisms of accumulation are driven by processes of dispossession. The commodification and privatization of nature, central to neoliberal capitalism, is a mechanism of accumulation by dispossession. Accumulation by dispossession is also an answer to the problem of overaccumulation faced by neoliberal capital (Harvey 2003: 146). Capital, according to Harvey, has regularly sought to solve the problem of accumulation through what is called a "spatial fix," that is, geographically expanding the reach of capital into areas of untapped resources and labor.

When imperialism and capital face the problem of resource shortages, a new space is sought as a "fix" to solve the problem threatening the growth and profitability of capitalist investment. In the context of timber extraction in colonial India, Pallavi Das has deployed the concept of "spatial fix" to interpret the colonial government's policies for solving the problem of timber scarcity in the latter decades of the 19th century. Das shows how Punjab's forests were exploited to meet the Delhi Railway's demands for timber. In other words, the local forests of Delhi were protected while the forests of Punjab were callously exploited (Das 2015: 66). But as forests in Punjab and other territories of British India dwindled, supplies were sought from outside the British controlled territories that included the various native states, and, after the turn of the 20th century, increasingly from Nepal as well. Environmental histories of imperialism have also identified forests

as key sites of colonial attempts to control territories and profit from their natural resources (Ross 2017). Forests were the crucial zone of ecological, social, and political transformation and were subjected to the "most extensive apparatuses of resource management to be found anywhere in the world" (Ross 2017: 275).

World system and dependency theorists have analyzed the extraction of resources from the global periphery in terms of the exploitative relationship between the metropole and the periphery (Frank 1966; Wallerstein 1974; Blaikie, Cameron, Seddon 1980; Mishra 1987). However, these theories do not pay direct attention to the ecological conditions under which such unequal relationships and exploitation occur. Moreover, dependency and world-system theory also fail to fully recognize the role and interests of peripheral states and their elites in keeping intact the unequal relationship although they do talk about comprador classes within the territory. Nevertheless, the agency of peripheral states and their elites in maintaining the exploitative relationship and unequal exchange does not get enough attention in these perspectives. And as Das has pointed out, what these perspectives "do not analyze is the manner in which resource-extracting mechanisms (e.g., railways) themselves consume resources and raw materials (e.g., timber) causing resource depletion" (Das 2015: 4). In this study, I take forward Das's line of inquiry and situate timber exports from Nepal in the context of high demands for sleepers by British Indian railways. Likewise, using insights from the dependency theorists and the idea of a "sacrifice zone," I interpret the ties between forested spaces of Tarai and the Kathmandu centered Nepali state as characterized by imperial and internal-colonial relationships. This article is an attempt to nudge the historiography of Nepal Tarai in those directions.

Before we get into the history of sleepers extraction in Nepal Tarai, it is pertinent to get a sense of economic processes in British India that were fueling demands for sleepers from Nepal after the First World War. We also need to locate the emergence of scientific forestry in the British Empire in the second half of the 19th century and its impact on forest management, exploitation, and subsequently conservation. The historian of Indian Railways, Ian Kerr has noted that, driven by post-war economic recovery, most of the 1920s were good years for railroads in India as route miles increased considerably during this period (Kerr 2007: 124). There was a substantial 50 percent increase in route mileage between 1905 and

1947 when India became independent, from 26,955 miles in 1905 to 40,524 miles in 1947. More importantly, there were 35,129 miles in 1919–1920 and 39,678 miles in 1929–1930, an increase of 4,549 miles. The Government of India also increased its budget for railroads to bolster post-WWI recovery. According to Kerr, "substantial increase to the capital budgets of the railroads were recommended [by Ackworth Committee's report in 1921] along with other fiscal measures—including the separation of railroad finances from those of the general budget of the Government of India so that the railroad administration, not the Finance Department of the Government of India, would manage the railroad budget" (Kerr 2007: 124). Kerr adds that the Committee's report was most influential in terms of its contribution "to the nationalization of Indian railroads and to their improvements in the 1920s" (Kerr 2007: 125). Likewise, the railway budgets were increased and separated from the general finances of the Government of India in September 1924. It was in this context of continued expansion and maintenance of railway mileage in British India that a sustained demand for sleepers arose and sleepers from Nepal Tarai became a premium commodity. The demand for sleepers from Nepal declined in the 1930s after the Indian economy too was hit by the Great Depression.

In British India, Imperial Forestry and the Forest Act of 1878 emerged out of a need to protect "the long-term interest in building an effective rail system," which led to "a new regime of forest control that sought to restrain private extraction of raw materials for the railways" (Rangarajan 1996: 29). British officials were anxious about private contractors felling trees indiscriminately and sought to regulate access to forests. Towards this end, the Imperial Forest Department was already set up in 1864 and the Imperial Forest Service was formed in 1867. The Forest Act of 1865 was the first step towards this regime of control that culminated in the Act of 1878. The main impetus behind such regime of control and efforts to protect timber, however, was "the problem of ensuring a steady supply of railway sleepers" (Rangarajan 1996: 29). Civil officials of the Raj had already begun to control the felling of trees by contractors and villagers with the creation of an executive position of Forest Officer and "extension of government control over large tracts of woodland" (Rangarajan 1996: 57). The Act of 1878 broadened the executive powers of the foresters by banning and prohibiting activities such as "felling, girdling, lopping, tapping, and burning trees" and even "stripping the bark of trees and collection of leaves" in reserved forests

(Rangarajan 1996: 69). The logic of imperial forestry where the forest officer had wide executive powers only continued to expand to other areas of the British Empire in the succeeding years (Barton 2002). The formalization of forest management shifted the control of forests from villagers and local users to trained officials. First introduced in British India by a Prussian Botanist named Dietrich Brandis, scientific forest management relied on systematic surveys and mapping of forests. The main objective of the scientific method was to measure tree growth and estimate "how much timber could be extracted annually without compromising the future productivity of the forest" (Oosthoek 2007: para 4). The intervention of trained forest officers in the forests of Nepal Tarai in the 1920s and later, therefore, comes out of this longer history of imperial forestry in colonial India. Additionally, as I show in this article, in Nepal too the idea of conserving forest and its scientific management emerged out of the need to continuously supply railway sleepers.

Preparations

On 28 March 1918, the Railway Board through the Government of India in the Foreign Department presented a request to the Nepal Darbar via the British resident in Nepal:

> From a report made by the Chief Engineer, Oudh and Rohilkhand Railway, it is understood that there is a plentiful supply of trees suitable for such sleepers in the Sarda Valley in Nepal. The Nepal Government have always shown themselves ready to assist in any scheme connected with the war, and the Government of India are hopeful therefore that they will now be willing to help by making available a supply of timber which could be utilised for sleepers of kind required.[6]

It was further suggested that the most satisfactory arrangement would be for the Nepal government to demarcate a certain area of the forest that was conveniently situated and permit the Conservator of Forests, United

[6] Copy of a letter from the Secretary to the Government of India in the Foreign and Political Department to the Resident in Nepal dated 28 March 1918, Railway Department (Railway Board), Stores, File No. 112S-18/1-2 B, NAI, 1918, p. 26.

Provinces (U.P.) "to work this area as if it were in British territory." The Nepal government would then receive a royalty for every tree felled. The Secretary also noted an alternative but less satisfactory arrangement for the supply of timber in which the sleepers would be cut by the local Nepali agency and transferred across the Sarda River under the supervision of the Conservator of Forests. The Nepal Darbar was asked to ascertain its choice and state if it had any other terms for the supply of timber.

Nepal's Prime Minister Chandra Shamsher was more than ready to help the Raj during its hour of need. He was already supporting the war efforts of the Raj by sending young Nepali men to fight for the British empire (Uprety 1984; Banskota 1994). Therefore, extracting timber from rich Nepali forests to assist the British government did not bother him in the slightest. In a letter dated 7 April 1918 Chandra promised that he is "ever willing to do whatever I can to render all possible assistance to the British government at this juncture, it would give me nothing but very great pleasure to secure a supply of the sleepers which, I understand, are so urgently required."[7]

In his letter Chandra also asked for the details of working and the particular area of the Sarda Valley that was considered to be worked upon for the sleepers, and "a map of the locality showing its area and boundaries" which would make it "convenient for us to identify the place and understand the extent of the ground covered thereby."[8] Chandra found the arrangement permitting the demarcated area to be worked by the Conservator of Forests of the U.P. the most satisfactory arrangement. Given the urgency of the matter and the ongoing war, to expedite the work, he consented to the said arrangement. Notably, this was the first time a forest in Nepal was to be worked by the Forest Department of British India. The *Kāṭhmahal*, or timber office of the Nepal government was in charge of affairs related to timber extraction and export until the First World War. The office primarily exported logs as its experiment with mechanized sawmills and sleepers export failed after little over five years of operation. Therefore, in many ways, the

[7] Copy of a letter from the Prime Minister of Nepal to the Resident in Nepal dated 7 April 1918, Railway Department (Railway Board), Stores, File No. 112S-18/1-2 B, 1918, NAI, p. 30.

[8] Copy of a letter from the Prime Minister of Nepal to the Resident in Nepal dated 7 April 1918, Railway Department (Railway Board), Stores, File No. 112S-18/1-2 B, 1918, NAI, p. 30.

extraction in the Sarda Valley represents a departure in the history of timber extraction and forestry in Nepal.

Chandra Shamsher had one concern though. He found the suggestion "to consider the area to be part and parcel of British territory" unnecessary.[9] Here we can see Chandra's anxiety about the question of Nepali sovereignty vis-à-vis British India (Sharma 2023). More than anything, he was uncomfortable with the language used by the Secretary of the Foreign and Political Department in his letter because, as Chandra pointed out, "the working party will have full control over the men under them and to facilitate smooth working we will even go so far as to relegate civil and criminal jurisdiction over those men who are British subjects in dispute amongst themselves."[10] However, if one or both of the disputants employed under the working party were Nepali, Chandra wanted them to be handed over to the Nepali authorities for trial. In other words, Nepali subjects would not come under the British jurisdiction conceded in the demarcated area.

In his letter, Chandra made it clear that Nepal intended to be as useful to the British government as it could. Therefore, going out of his way to show his deference to the Raj, Chandra made an offer free of royalty of "up to two lakh broad gauge sleepers that can be sawn and taken out by the said Conservator from the Sarda Valley demarcated area during the continuance of the war or in two years from the date of starting of work whichever of two may be longer."[11] Chandra presented this offer as Nepal's contribution toward the prosecution of the great war with hope and prayers for the final success of the British forces. In addition, the Nepal government also proposed to supply, at a royalty, more sleepers than those offered.

The Government of India was grateful for the prime minister's offer and in his letter to the resident, the secretary clarified that his government did not mean to ask that "the area should be regarded as British territory for

[9] Copy of a letter from the Prime Minister of Nepal to the Resident in Nepal dated 7 April 1918, Railway Department (Railway Board), Stores, File No. 112S-18/1-2 B, 1918, NAI, p. 30.

[10] Copy of a letter from the Prime Minister of Nepal to the Resident in Nepal dated 7 April 1918, Railway Department (Railway Board), Stores, File No. 112S-18/1-2 B, 1918, NAI, p. 30.

[11] Copy of a letter from the Prime Minister of Nepal to the Resident in Nepal dated 7 April 1918, Railway Department (Railway Board), Stores, File No. 112S-18/1-2 B, 1918, NAI, p. 31.

the time."[12] A Foreign and Political Department note states that the Nepal government misunderstood their intention, but everything was to be cleared up. A letter from F.J. Harvey to F.D. Couchman, a member of the Railway Board, shows that while the offer of two lakh sleepers was great, it was not the most important thing. For companies like O. & R. Ry., the most important thing was that the Forest Department "be allowed to work this forest for the future & to be able to ensure a lakh of sleepers *for ever* [emphasis in the original] from this forest which is some hundred of square miles in extent."[13]

The area selected for extraction was the sal forests along Unrao, the first tributary of Sarda (also called Mahakali in Nepal), north of Baramdeo. The area was inspected immediately, in April and May, as it would be impossible to do so after June. The Forest Department then would start working in the area in November 1918. It was also decided that after two years, the Conservator of the Forests would deal directly with the Nepal government to discuss future outturns and royalty. In other words, the Forest Department would be the supplier of sleepers to the Railway companies in British India.

The Railway Department then sanctioned the construction of the Tanakpur-Baramdeo line extension, about 4.5 to 5 miles as a fair-weather line for obtaining a supply of sal sleepers from the forests of Nepal in early 1919. The question of getting sleepers from Nepal was settled but there still was an issue of delivering them to India. In a letter to Sir Robert Gillan, President of the Railway Board, the agent of O. & R. Ry. provides a clearer picture of the situation:

> Unless the work is started at once now that labour is coming in and will be available it will not be completed in time to get the sleepers down before the rains and a whole year will be lost and the consequence of delay now may be even more serious and affect the negotiations which have been made with the Nepal Government.[14]

[12] Copy of a telegram from the Secretary to the Government of India in the Foreign and Political Department to the Resident in Nepal dated 3 May 1918, Railway Department (Railway Board), Stores, File No. 112S-18/1-2 B, 1918, NAI, p. 32.

[13] Letter from F.J. Harvey to F.D. Couchman dated 30 April 1918, Railway Department (Railway Board), Stores, File No. 112S-18/1-2 B, 1918, NAI, p. 20.

[14] Demi-official from the Agent, Oudh and Rohilkhand Railway, to Sir Robert Gilian dated 22 November 1918, Railway Department (Railway Board), Projects-A, Notes, File No. 878-p-16/1-36, 1919, NAI, p. 4.

In the previous years when chir sleepers from the forests of Kumaon came to Baramdeo, it was very difficult to obtain enough carts or camels to transport them to the railway head. Owing to wartime military demands for camels and carts, it was expected that the difficulties in conveying sleepers to the railhead would only get worse. Therefore, the Tanakpur-Baramdeo extension was seen as the only reliable alternative to convey sal sleepers obtained from the Nepali forests of the Sarda Valley. In addition, as the secretary to the U.P. government in the Public Works Department, H.M. Willmott noted, "the extension will also afford valuable additional facilities opening up the Nepal markets, Barmdeo being already an established mart for that State."[15] He was also worried that the failure to get the extension up and running would hamper the future timber interest of the railway companies. Adding that "such a failure would be deplorable from the aspect of the future exploitation of the Nepal forests. Whereas a successful working of the present concession might go far to solve the present problem of sleeper supplies for State lines."[16]

In a meeting held in Naini Tal, in April 1918, between Harvey, representing the railway, and P.H. Clutterbuck and J.V. Collier,[17] forest officers of the U.P. had already concluded that to make the Nepal scheme a success three conditions were absolutely necessary:

1) That a Meter Gauge siding be constructed for 5 miles from Tanakpur to Barmdeo.
2) That about 10 miles 2' gauge tramway be constructed in extension of (1) above along the road made by the Forest Department.

[15] Letter from H.M. Wilmott to the Secretary to the Government of India, Railway Department dated 25–26 November 1918, Railway Department (Railway Board), Projects-A, Proceedings, File No. 878-p-16/1-36, 1919, NAI, p. 8.

[16] Letter from H.M. Wilmott to the Secretary to the Government of India, Railway Department dated 25–26 November 1918, Railway Department (Railway Board), Projects-A, Proceedings, File No. 878-p-16/1-36, 1918, NAI, p. 8.

[17] Clutterbuck was the Chief Conservator of Forests, U.P. and Collier was the Deputy Conservator of Forests, Haldwani Division, U.P. Collier was entrusted by the Government of the U.P. and the Forest Department to oversee timber operations in Nepal.

3) That about 300–400 yards of steel wire rope (old) would be required for a rope sling over the Sarda River.[18]

The cost of construction of 4.5 miles of fair-weather line was estimated to be Rs. 82,600 and it would run for the most part through the Government of India's forest land. All in all, it was agreed that the U.P. Forest Department working under Collier would supply one lakh first class sal sleepers per year for two years starting from the autumn of 1919. The meeting also decided that the passing of the sleepers would be carried out by the Forest Department and accepted by the railways. Moreover, the Rohilkhand and Kumaon Railway (R. & K. Ry.) would act as sleeper agents for the O. & R. Ry. and North Western Railway (N.W. Ry.) as approved by a meeting of chief engineers in Delhi and the sleepers would be delivered by rail on the R. & K. Ry. The Forest Department would also be responsible for the disposal of scantlings after the production of sleepers. The price of sleepers was set at Rs. 4 each but subject to revision for unforeseen difficulties in the supply chain. The railways also advanced Rs. 5,000 during 1918–1919, and the amount was to be cleared against the supply of sleepers.

Getting to Work

The forests from which the sleepers were to be extracted were shown to Collier by a Nepal government official (Subba) named Basudev Sharma. The forest demarcated by Sharma and Collier had definite watershed boundaries and "contained no villages," so artificial demarcation was deemed unnecessary.[19] One lakh sleepers were extracted in 1919–1920 and another one lakh in the 1920–1921 season.[20] In addition to the broad gauge sleepers, the extraction also resulted in a good amount of meter gauge sleepers and

[18] Minutes of a meeting held at Naini Tal regarding Nepal sal sleepers from Unarao Valley, Railway Department (Railway Board), Projects-A, Notes, File No. 878-p-16/1-36, 1919, NAI, p. 8.

[19] Memorandum on the work of extraction of broad gauge sleepers from the Nepal forests of the Sarda Valley, Foreign and Political Department, General-B, File No. 60-61, 1919, NAI, p. 5.

[20] Even though the war had ended in 1918, the Nepal government stuck to its commitment of gifting two lakh sleepers free of royalty. I have found no archival sources explaining why Chandra allowed the extraction work to go ahead, but one can surmise that he had other political agendas, especially the full recognition of

scantlings from portions of the trees such as odd length stems and larger branches that did not yield broad gauge sleepers.

The outturn of miscellaneous timber, which consisted of timbers of short lengths and inferior quality, alone generated a value of more than Rs. 100,000 and was exported simultaneously with the broad gauge sleepers. Miscellaneous timber probably fed furniture and match industries in different parts of India. The U.P. Forest Department did not take a share of the profits from the sale of miscellaneous timber. The royalty from the sale of the miscellaneous timber went to the Nepal government. The Forest Department and Collier also requested the Nepal government give Collier the same absolute control over the conversion and export of miscellaneous timber as with the broad gauge sleepers because divided control vis-à-vis miscellaneous timber and broad gauge sleepers could only muddle things and create friction between Collier and the Nepali authorities. Therefore, the Forest Department and Collier pointed out that "if this power is given to him the officer in charge will control the conversion, export, and collection of royalty of this miscellaneous timber in exactly the same manner as is done in forests directly under the Forest Department."[21] Collier and the Forest Department did not entertain the possibility of another center of control when it came to the extraction and export of all kinds of timber from the Sarda Valley. As I show in the latter sections, the Nepali state agreed to this condition as well.

The contractors employed by the officer in charge bore the expense of conversion and transport of the miscellaneous materials whereas the Forest Department covered the expense of checking, measuring, and collection of royalty and forwarded it to the Nepal government without deductions. Therefore "the Nepal Government [would] … receive revenue but incur no expenditure of any kind."[22] The royalty rate was levied per cubic foot of timber and proposed at 10 *ānā*s by the Nepal government. Collier was a bit

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Nepal's independence and sovereignty in mind when he went out of his way to help the British Empire.

[21] Memorandum on the work of extraction of broad gauge sleepers from the Nepal forests of the Sarda Valley, Foreign and Political Department, General-B, File No. 60-61, 1919, NAI, p. 6.

[22] Memorandum on the work of extraction of broad gauge sleepers from the Nepal forests of the Sarda Valley, Foreign and Political Department, General-B, File No. 60-61, 1919, NAI, p. 6.

skeptical and considered 10 *ānā*s per cubic foot so high that it would defeat the object of the operation and discourage the contractors from converting the miscellaneous timber. Eventually, as the Forest Department was getting all first-class broad gauge sleepers free of royalty, 10 *ānā*s per cubic foot for miscellaneous was deemed correct.

Collier asked the Nepal government to allow him and his contractors to purchase essential supplies like ghee, wheat, rice, and other food articles that could be obtained locally. Nevertheless, in his memorandum, Collier notes that "there is no desire to see any pressure brought upon villagers to supply. It is only asked that those villages which are willing to supply may be allowed to do so."[23] Collier acknowledged that such permission would temporarily have an adverse effect on the revenue of the Baramdeo chowki/market but "this loss will be more than compensated for by the royalties received from the miscellaneous timber."[24] In addition, he argued that the Baramdeo chowki would also gain immensely and on a permanent basis by the extension of the railway line from Tanakpur to Baramdeo.

As the work in the Sarda Valley moved forward, Collier also pointed out the need to protect the felling areas from fire during the months in which sleepers and miscellaneous timber were converted. The dry months from March to April saw a significant rise in the risk of forest fire in the hills and plains of Nepal and adjacent parts of British India. These fires were not entirely due to natural causes. Collier, therefore, pointed out that the Nepal government could issue an order prohibiting the firing of the forests near the felling areas by local farmers and cattle herders. Further, he asked the Nepal government to supply 20 fire patrols, who would be paid wages by the Forest Department, from the village of Baragaon and the cattle station of Ban.

The work in the Sarda Valley was on a significantly larger scale than other regular operations carried out by the U.P. Forest Department.[25] The project employed about 4,000 men annually. Most of these workers and loggers

[23] Memorandum on the work of extraction of broad gauge sleepers from the Nepal forests of the Sarda Valley, Foreign and Political Department, General-B, File No. 60-61, 1919, NAI, p. 7.

[24] Memorandum on the work of extraction of broad gauge sleepers from the Nepal forests of the Sarda Valley, Foreign and Political Department, General-B, File No. 60-61, 1919, NAI, p. 7.

[25] Letter from A.C. Chatterjee to Secretary to the Government of India, IOR/L/E/7/961, File No. 3550, 1919, The British Library, London (hereafter BL).

came from north Indian plains and were brought to Nepal by contractors themselves. Under ordinary circumstances, the Forest Department would have employed an officer just for this project on special duty, but as there was no such officer available, Collier undertook the charge of the operation in addition to his ordinary duties as the Deputy Conservator of Forests of the Haldwani division. An allowance of 20 percent of his salary was granted to Collier for this work in Nepal and "the cost of allowance will be covered by the amount to be paid by the North Western Railway for the extraction of sleepers."[26] On top of his regular salary of Rs. 700 per month, Collier would receive an allowance of Rs. 140 per month throughout his work in Nepal until June 1921. What started as short-term work in Nepal would change into Collier's long engagement with the Nepal government in the working of Nepali forests.

Working Nepali Forests Further

The first two lakh sleepers, offered free of royalty, were extracted and exported from the Sarda Valley by March 1921.[27] After the first two years, the Nepal government asked the U.P. government to lend Collier's services to continue the work in the same area till the end of June 1922. The U.P. government duly obliged. Impressed with Collier's work, the Nepal government wanted him to stay and work in Nepal for longer. In a letter to the British Resident in Nepal, Prime Minister Chandra Shamsher wrote:

> The work on which he was engaged was completed very successfully and I beg to send our grateful thanks to the said Government through your goodself for the loan of his valuable services. If not inconvenient to the said Government I would ask again for a loan of his services commencing from 1st August 1922 for a year and shall feel obliged if you will kindly obtain their consent to it.[28]

[26] Letter from A.C. Chatterjee to Secretary to the Government of India, IOR/L/E/7/961, File No. 3550, 1919, BL.

[27] "Note on Mr. J.V. Collier's service in Nepal," Serial No. 25, Pokā No. not available, Vividh Viṣayakā Ciṭhī Patra Tathā Kāgajātharū, date not available, Foreign Ministry Archives, National Archives of Nepal, Kathmandu (hereafter FMA).

[28] Copy of a letter from the Prime Minister of Nepal to the British Resident dated 8 June 1922, Foreign and Political Department, External Branch, File No. 820, S. no. 1-2, 1919, NAI, p. 11.

The Indian government had no objection to this request and duly lent Collier's service to Nepal for one more year. Collier's services came into effect in September 1922 and he was on a salary of Rs. 2,400 per month, plus a monthly traveling allowance of Rs. 300. During the loan years, Collier worked in the forest lying between Kauriala (also known as Karnali) and Mohna, and for the successful carrying of the work the Nepali prime minister found "his knowledge and experience as a Forest Officer of immense value."[29] The Nepal government needed a capable hand to assist it "in the development of our forest resources."

A note on his service in Nepal states that Collier carried out his duties "so successfully and well that his achievements in three years work of the time was considered a record. An account of it was subsequently published by order of the Government of India for distribution among various local governments with a view of providing them with an object lesson for the development of their forests on economic lines."[30] The work in the Sarda Valley was also considered the first instance of the application of "scientific forest management" to timber extraction in Nepal. Earlier Nepali practices of logging and processing were seen as wasteful and inefficient. Notably, indigenous practices of forest use were almost invariably seen as damaging to commercial interests by Indian forestry officials, and local users were blamed for destroying valuable timber reserves (Rangarajan 1996: 99).

After four years of work in Nepal, while still an employee of the British government, Collier took early retirement from his position as the Deputy Conservator of Forests and headed to Nepal to begin his new career as a Forest Advisor to the Government of Nepal from 1 September 1923. His main task was to keep working in the forests of western Tarai and extract sleepers for export to the railway companies in India. As there was a concern over the indiscriminate felling of valuable trees and the clearance of forest tracts in a haphazard manner in other forests worked by *Kāṭhmahal* officials and their contractors, the Nepal government needed someone with Collier's "scientific" credentials to stem the loss of its forest resources. In addition to his salary and allowances, the Nepal government granted Collier a 5 percent

[29] Copy of a letter from the Prime Minister of Nepal to the British Resident dated 19 June 1922, Foreign and Political Department, External Branch, File No. 820, S. no. 1-2, 1919, NAI, p. 18.

[30] "Note on Mr. J.V. Collier's service in Nepal," Serial No. 25, Pokā No. not available, Vividh Viṣayakā Ciṭhī Patra Tathā Kāgajātharū, date not available, FMA.

commission on the net income in royalties realized from work directed and supervised by him. The Nepal sal sleeper was sold at Rs. 9/8/0 (nine rupees and eight *ānā*s) per sleeper.

Investment, Supply, and Marketing of Nepali Sleepers

In terms of capital investment, there was none from the Nepal government "except the latent capital value of the forests themselves." In fact, Collier worked his scheme completely on advances made by the Indian government as "the Nepal Government consider it derogatory to lay down capital and enter into anything in terms of a formal contract."[31] Here Collier might be exaggerating the Ranas' lack of interest or cautiousness when it came to making big capital investments in Nepal, but it is clear that the Rana state was happy to let Collier and his contractors do the work as long as revenue and royalty expectations of Kathmandu were met.[32] As discussed above, here we see the geographical expansion of British Indian capital into areas of formerly untapped resources by dispossession of premium natural resources. The capital investment from the Railway Department was also instrumental in converting the rich forests of Nepal Tarai into sacrifice zones ready for extractivist methods.

Nepal sal sleepers had an average life of 20 years and were considered of superior quality than U.P. or C.P. sal. Moreover, as Nepali forests were not worked before as in U.P. and C.P., they contained magnificent trees, some of them yielding as many as 100 broad gauge sleepers. Railway companies used deodar sleepers as well, but unlike sal, deodar sleepers required bearing plates and were less durable even though they were available at Rs. 7. Collier supplied two lakh sleepers a year in 1922–1923 and 1923–1924. He was planning to extract a total of 10 lakh broad gauge sleepers by 1927 and sell them at Rs. 9/8 apiece. Towards that goal, Collier proposed to open up a new forest to supply sleepers at Biknathori, a terminal station of the Bengal and North Western Railway (B. & N.W. Ry.) on the Nepal border. From 1927 onwards, the sleepers would be supplied at Biknathori and Katarnian stations,

[31] Supply of Nepal Sal through Mr. V.J. Collier [sic], Railway Department (Railway Board), Stores, File No. 945-S/48 B, 1924, NAI, p. 5.

[32] In 1900, the Rana state had established Nepal Government Timber Works and Saw Mills and set up two mills in Nawalpur and Nepalganj under the supervision of British engineer named Edwin Alexander Enever. The mills incurred heavy losses and were eventually shut down in 1905.

more to the west, with half of the total sleepers at each station. Collier kept supplying two lakh sleepers every year in 1924–1925, 1925–1926, and 1926–1927.[33] In 1927–1928, however, Collier planned to increase the supply to five lakh sleepers. Ambitiously, Collier believed Nepal could then supply five lakh sleepers every year for many years at two railheads on or near the Nepal border. "For a sleeper delivered at a railway station for Rs. 9/8 the Nepal Government claimed 4/8 by way of royalty."[34] Nepal sal sleepers were in competition with sleepers obtained from Indian sal and the price was to a great deal dependent on the "extent on the railway freight from the source of supply to the place where they were required."[35] Nevertheless, the cost of extracting the sleepers was less in Nepal than in India because in Nepal Collier was tapping virgin forests. Contractors employed for extraction were given a profit of 10 percent of their outlay.

Indian Railway officials were also curious to know if the Nepal government was disposed to lease the forest to private firms. A Chief Engineer of the Railway Department, F.W. Allum, wrote to Collier stating "if the Nepal Govt. decided on this course the Indian Railways would be prepared, I felt sure, to bid for such concession and work the forests for themselves."[36] Collier informed an official that, because of political considerations, Nepal government would not lease forests to private Indian Railways as forests were state concerns.

From 1923 onwards Collier started to work in the area that was demarcated by the Indo-Nepal border on the South, the Karnali River to the west, the Babai River to the east, and the main watershed of the first major range of hills to the north. Collier estimated that about 15 lakh sleepers could be extracted from this area which was about 20 miles from the railhead. The station for delivery of sleepers extracted from this area was Nishangara, a B. & N.W. Ry. station and the freight charge from Nishangara to Lucknow was

[33] The scale of operation suggests that many hectares were logged and cleared of forest cover every year, which in turn might have opened up the possibility of new agricultural settlements in western Tarai.

[34] Supply of Nepal Sal through Mr. V.J. Collier [sic], Railway Department (Railway Board), Stores, File No. 945-S/48 B, 1924, NAI, p. 9.

[35] Supply of Nepal Sal through Mr. V.J. Collier [sic], Railway Department (Railway Board), Stores, File No. 945-S/48 B, 1924, NAI, p. 10.

[36] Supply of Nepal Sal through Mr. V.J. Collier [sic], Railway Department (Railway Board), Stores, File No. 945-S/48 B, 1924, NAI, p. 11.

Rs. -/7/6 a sleeper.[37] For the period between 1 November 1922 and 1 June 1927, Collier and the Nepal government entered a contract with Mohammad Khan and Ram Narain of Bareilly. All serviceable broad gauge sal sleepers in or exported from the area during the period would be delivered by Khan and Narain to the O. & R. Ry. and no other party.

The contract made it explicit that all sal trees felled by Khan and Narain "shall be converted as far as possible in Broad Gauge sleepers and any other material shall only be converted from timber unfit to yield broad gauge sleepers."[38] If Khan and Narain failed to observe this clause their contract would be canceled. Collier was responsible for marking the trees for felling and conversion, and Khan and Narain felled and converted all such marked trees in the area demarcated for sleeper operations. Collier was also to act as an arbitrator between the contractors and the O. & R. Ry., and took charge of approving sleepers that would then be accepted by the railway. The contractors were not to bear the due on account of rejected sleepers and it was agreed that "the O. & R. Ry. shall so far as is possible take such sleepers over at reduced rates agreed upon by the O. & R. Ry. and the Officer in Charge."[39]

In 1924, the first year of operation in the area between Karnali and Babai, Collier's contractors built a light railway to Thori to expedite the delivery of two lakh sleepers for the next year. They built the light railway using a part of an advance of Rs. 10 lakhs received from the O. & R. Ry. And as Collier wrote in his letter to Harvey, "the alternative of Nepal itself financing the whole show is a hopeless one. One would never get the show going."[40] Writing to F.W. Allum of the Railway Board, Chief Engineer of the O. & R. Ry., F. Furnivall noted that for the subsequent five years after 1927, the question regarding the number of sleepers required depended on the future basis of the revenue program renewals of the O. & R. Ry. Furnivall calculated the requirement at approximately two lakh sleepers per annum based on their

[37] Letter from F. Furnivall to F.W. Allum dated 27 February 1923. Railway Department (Railway Board), Stores, File No. 945-S/48 B, 1924, NAI, p. 28.

[38] Supply of Broad Gauge Sleepers from Nepal to the Oudh and Rohilkhand Ry., Railway Department (Railway Board), Stores, File No. 945-S/48 B, 1924, NAI, p. 61.

[39] Supply of Broad Gauge Sleepers from Nepal to the Oudh and Rohilkhand Ry., Railway Department (Railway Board), Stores, File No. 945-S/48 B, 1924, NAI, p. 63.

[40] Letter from Collier to Harvey dated 13 January 1923, Railway Department (Railway Board), Stores, File No. 945-S/48 B, 1924, NAI, p. 81.

estimated railway's wooden sleeper mileage of 1,250 miles.[41] Therefore, in the absence of the Nepal government's desire to invest significantly, railways were the main players in funding the sleeper operations under Collier.

Opening New Zones of Operation

While overseeing the scheme as the officer in charge of the Nepal government's sleeper operations, in June 1923, Collier also prepared a note on the possibilities of increased supplies of broad gauge sleepers from Nepal. Regarding the areas of supply, Collier believed that it would not be practicable to work more than two areas at a time. One such area, which had already been opened up in the previous working season, was in the valley of the Gogra River. This area at the foothills was connected by a light railway from Nishangara. The second area was immediately to the east of the Gandaki River and sleepers from this area reached the B. & N.W. railhead at Biknathori. The Gogra area was conveniently situated for the O. & R. Ry. whose nearest station Burhwal was about 120 miles from Nishangara. Likewise, the Biknathori area would serve chiefly for the East Indian Railway (E.I. Ry.).

After surveying the Gogra area, Collier estimated that the area contained approximately 14 lakh sleepers. Although the Biknathori wasn't surveyed by Collier, he did not doubt that the area was as rich as the Gogra if not richer. Collier's calculation regarding the rate of outturn for the following four years was as given in Table 1, with the possibility of outturn from Biknathori could be increased if required.[42] Because of the curtailment of some programs at O. & R. Ry., from 1924–1925, sleepers were available for other railways as well.

The supply of Nepali sal sleepers had a lowering effect on the price of sleepers from other sources. For example, in early 1922, the price of C.P. and U.P. sleepers was Rs. 9/8 but they fell to Rs. 9 and Rs. 8/12 respectively in 1923. Collier attributed this fall directly to the Nepal supply. He believed that the extension of sleeper operation to a second area "meant that Nepal has begun to realise for the first time what a big asset their forests represented." Moreover, Collier was confident enough to say that a successful working

[41] Extract from a letter from F. Furnivall to F.W. Allum dated 7 March 1923, Railway Department (Railway Board), Stores, File No. 945-S/48 B, 1924, NAI, p. 43.

[42] Notes on possibilities of increased supplies of b.g. [i.e., broad guage] sleepers from Nepal dated 9 June 1923, Railway Department (Railway Board), Stores, File No. 945-S/48 B, 1924, NAI, p. 91.

of the second area would succeed in establishing the supply of sleepers "permanently" for Indian railway companies like the Great Indian Peninsula (G.I.P.) Railway, E.I. Ry., and O. & R. Ry. because of the geographical advantages they had when it came to obtaining sleepers from Nepal. Full of faith in the miracles of scientific forestry Collier believed that even "if only trees already mature are considered, [forests of Nepal] can serve their [railway companies'] needs for at least this century."[43]

Table 1: Possible Outturn of No. of Sleepers From Gogra and Biknathori

Financial Year	Gogra	Biknathori	Total
1923–1924	325,000	0	325,000
1924–1925	300,000	75,000	375,000
1925–1926	300,000	150,000	450,000
1926–1927	300,000	200,000	500,000

The railways financed Collier's Nepal operations, so they also expected the new supply to bring down the price of sleepers. Collier was cautious, however, and in his letter to Allum noted that "however far it [bringing the price of sleepers down] can do so will of course depend entirely on the quantities of sleepers available from other areas."[44] One problem faced by Nepal sleepers regarding competition was that many railways were already involved in long term contracts with other suppliers. Another problem was a cut down in some railway programs. Nevertheless, Collier placed his hopes on the fact that the days of the C.P. supply were numbered and U.P. sleepers were of inferior quality. He did not want the Nepal supply to fizzle out as it was arranged after much trouble. To keep the supply going, however, he was willing to keep the supply on a considerably lesser scale without stopping it completely. Chief Engineer Sleeper Conference of July 1923 decided to take sleepers from Collier as estimated in Table 1.[45] The engineers were disinclined

[43] Notes on possibilities of increased supplies of b.g. sleepers from Nepal dated 9 June 1923, Railway Department (Railway Board), Stores, File No. 945-S/48 B, 1924, NAI, p. 94.

[44] Letter from J.V. Collier to F.W. Allmum dated 14 June 1923, Railway Department (Railway Board), Stores, File No. 945-S/48 B, 1924, NAI, p. 96.

[45] A sleeper conference meeting of chief engineers representing various railway companies across British India was held in Banglore on 17 and 18 July 1922. The

to enter into a long-term contract with Collier for Nepal sleepers though. Collier noted that if the contract was for less than three years, opening up a new area in Nepal "would never be worthwhile" because it would take at least a few years to extract available sleepers in a new area.[46]

The working year for Nepal sleepers and the financial year for the railways did not coincide with each other and this led to a slight problem. As a result, the Chief Engineer of the O. & R. Ry. noted, "we have to pay for a lot of sleepers in one year that we are going to use in the next i.e. the sleepers that come in in February and March which cannot be put in line in that year."[47] Each year, to finance his operations, the Railway Board supplied Collier Rs. 4/8 per sleeper in advance even before the delivery of sleepers. Table 2 provides the breakdown of the process and pricing involved.[48]

Table 2: Breakdown of the Cost of Sleepers (Rs.)

For broad gauge sleepers sawn	3/8 each
Sleepers carted to tramway head	1/- more
For sleepers delivered at railway stations in British India	4/12 more
For sleepers loaded	-/4 more
Total	**9/8**

To get a picture of how the system worked until June 1923, let's consider the following. In the case of the Nishangara area, the Railway Board had paid a sum of Rs. 947,600 against 180,000 sleepers sawn and stacked but not delivered. Additional funds of up to the value of 325,000 delivered sleepers were required in that financial year to balance the value of sleepers delivered and funds granted by 31 March 1924. In the case of the Biknathori area, the delivery would begin in 1924–1925 with 75,000 sleepers. Collier believed that the benefits of such financial arrangements went entirely to

conference passed several resolutions related to pooling and purchase of railway sleepers.

[46] Letter from J. Coates to F.W. Allum dated 23 July 1923, Railway Department (Railway Board), Stores, File No. 945-S/48 B, 1924, NAI, p. 115.

[47] Letter from J. Coates to F.W. Allum dated 23 July 1923, Railway Department (Railway Board), Stores, File No. 945-S/48 B, 1924, NAI, p. 115.

[48] Note regarding financing Nepal sleeper supply, Railway Department (Railway Board), Stores, File No. 945-S/48 B, 1924, NAI, p. 122.

Nepal and not contractors, who received "a moderate and fair profit only."[49] Collier also made it clear that he would not agree to any artificial limit being set to the profit of Nepal, as the profit per sleeper was the only test of his efficiency and his sole interest. More than financial backing, however, Collier was more concerned with getting guaranteed orders from the railway companies for his sleepers. The Nepal government, convinced of Collier's efficiency and interests, meanwhile, allowed him to open up new areas for logging operations. Notably, there were some doubts about extending the existing system of finance to a new area and Collier was considering other arrangements, which included asking the Nepal government to finance the operations themselves. Collier needed the Railway Board's permission even to explore these options.

After the working season in 1923, the first working season in the Koriala forest, there were 180,000 sleepers cut, stacked, and ready for export for the early next season. The amount spent up to the end of the season was Rs. 5/4/3 per sleeper sawn. A light railway of 2' gauge was also constructed from Nishangara to the foot of the hills in the same year and Collier believed this would render the extraction of 14 lakh sleepers possible from a largely virgin forest. According to Collier's report on the progress of Nepal sleeper operation in the area:

> In order to charge as much as possible of the cost of this line to actual sleepers and to keep a clear account, an endeavour was made to saw as many sleepers as possible. This was difficult as the forests were at the foot of the hills and until the construction of the line was complete there were no communications for food supplies etc.[50]

Rs. 947,600 was spent in the first working season. Rs. 810,000 was spent on the part cost of 180,000 sleepers and the remaining Rs. 137,600 was the cost of engines and rolling stock. Collier noted that, owing to the absence of communications, sufficient sleepers could not be cut to enable the cost

[49] Mr. J.V. Collier's note on conversation with Chief Engineer O. & R. Railway, 23 July 1923, Railway Department (Railway Board), Stores, File No. 945-S/48 B, 1924, NAI, p. 127.

[50] Report on the progress of Nepal Sleeper Operations in the Koriala forests during the first working season, 9 June 1923, Railway Department (Railway Board), Stores, File No. 945-S/48 B, 1924, NAI, p. 144.

of engines and rolling stock to be charged off against sleepers. The first six weeks of the next working season would take care of this imbalance by the sawing of 100,000 more sleepers. Even before the work was undertaken Collier had pointed out that because it was the first season, there would be expenditure not covered by sleepers but effort would be made to reduce this to the minimum. The outturn for the next four years was projected to be around Rs. 12.25 lakhs and there was a contract that O. & R. Ry. would take 10 lakh sleepers at Rs. 9/8 per sleeper. Because of the reduction in the program, O. & R. Ry. would not require the whole 10 lakh sleepers and in that case "they will have to sell the unrequired balance to other railways."[51] This represented a difficulty of sorts, because in the previous year the price of C.P. sleepers had already fallen from Rs. 9/8 to Rs. 9.

The Price of Nepali Sal Sleepers

The 1920s was a period of significant expansion in railway route miles in British India. The year between 1920 and 1930 saw an increase of 4,549 miles (Kerr 2007). Moreover, according to Kerr, "the most telling statistic was the Rs. 2,772,183,000 cumulative capital expenditure on the railroads in the decade 1919–1920 to 1929–1930 as compared to the preceding and succeeding decades, Rs. 1,239,101,000 and Rs. 306,025,000 respectively" (Kerr 2007: 124). Therefore, with growing capital expenditure on the railroads and increasing route miles, the demand for sleepers, including sal sleepers from Nepal was also very high. In this context, the Railway Board assured Collier that they would like him to continue the sleeper operations even after June 1927 and that they would also pay promptly.[52] The details of the renewals of the Nepal agreement were settled in June when Collier went to Shimla. By 1927, the Nepal sleepers operations were supplying "practically all the E.I. Ry's sleepers, and a considerable proportion of the B.B. & C.I. Ry's [Bombay, Baroda, and Central Indian Railway] and E.B.

[51] Report on the progress of Nepal Sleeper Operations in the Koriala forests during the first working season, 9 June 1923, Railway Department (Railway Board), Stores, File No. 945-S/48 B, 1924, NAI, p. 146.

[52] Note accompanying a letter from the Forest Advisor to the Government of Nepal, Railway Department (Railway Board), Stores, File No. 945-S/57-70 B, 1927, NAI, p. 1.

Ry's [Eastern Bengal Railway]."[53] In 1927, the total supply amounted to 535,000 broad gauge and 225,000 meter gauge sleepers. And as it was noted in the meeting of the chief engineers "there is no other sleeper supply that compares with it at all in efficiency."[54]

In 1925, Nepal reviewed the price of sleepers and asked for Rs. 0/12/0 (i.e., 12 *ānā*s) per sleeper over and above the price of the "next best sal sleeper." An arrangement was reached at a meeting of sleeper suppliers and the railways in Shimla where Collier represented the Nepal government. According to the agreement, sleepers from Nepal would be paid Rs. 0/12/0 more than the price of sal sleepers from the C.P. in British India. The phrase "next best sal sleeper" was deemed too vague by the railway engineers as they believed that sal sleepers from the Garo Hills in Assam were as good as Nepal sal.[55] Therefore, they preferred the "method of fixing the price in relation to the ruling price of C.P. sal sleepers." They did not however object to the Rs. 0/12/0 difference because the standard of passing adopted by Collier was high. The price of C.P. sal was settled at Rs. 8 and Nepal sal at Rs. 8/12/0.

Railway companies wanted meter gauge sleepers too, but they were not Nepal's priority as there was not much incentive to sell meter gauge sleepers at Rs. 3. Consequently, in 1925–1926 many railways faced a big shortage of meter gauge sal sleepers. Whatever meter gauge sleepers Nepal supplied was out of the wastage incurred in sawing broad gauge sleepers. Collier supplied about one lakh meter gauge sleepers to the B.B. & C.I. Ry. in 1925–1926 and 2.25 lakh sleepers to the same railway companies in 1926–1927 at Rs. 3 per sleeper. The railways expected up to two lakh meter gauge sleepers per annum to meet their requirements.[56] Collier could only supply one meter gauge sleeper for every three broad gauge sleepers.

[53] Nepal Sal—Arrangements made for the purchase of at least three lakhs b.g. and one lakh m.g.—per annum during the next 3 years, Railway Department (Railway Board), Stores, File No. 945-S/57-70 B, 1927, NAI, p. 2.

[54] Nepal Sal—Arrangements made for the purchase of at least three lakhs b.g. and one lakh m.g.—per annum during the next 3 years, Railway Department (Railway Board), Stores, File No. 945-S/57-70 B, 1927, NAI, p. 3.

[55] Nepal Sal—Arrangements made for the purchase of at least three lakhs b.g. and one lakh m.g.—per annum during the next 3 years, Railway Department (Railway Board), Stores, File No. 945-S/57-70 B, 1927, NAI, p. 4.

[56] Nepal Sal—Arrangements made for the purchase of at least three lakhs b.g. and one lakh m.g.—per annum during the next three years, Railway Department (Railway Board), Stores, File No. 945-S/57-70 B, 1927, NAI, p. 5.

In order to discuss the continuation of sleeper supply from Nepal, as proposed by Collier, now the Forest Adviser to the Government of Nepal, a meeting was held on 28 June 1927 at the Railway Board office. All participants in the meeting agreed that there would be a big increase in the number of broad gauge and meter gauge sleepers required during the next 3 or 4 years by the E.I. Ry. and other companies because of extensive programs of new construction of routes. The meeting decided that the E.I. Ry. and other railways in the Central Group required three lakh broad gauge sleepers per annum offered by Nepal for three years from 1927 to 1930.

Collier informed the Railway Board members that if arrangements with the Board were renewed, he intended to work the forests lying between the Koriala and Sarda Rivers during the next three years and exhaust these forests of their mature timber. Based on his preliminary enumeration of trees for felling, he estimated that the total output would probably amount to about 11 lakh broad gauge sleepers. Therefore, he recommended that sleeper supply from Nepal should be renewed for three years if the Board would buy no less than nine lakh broad gauge sleepers in all, or three lakh sleepers per annum during the period. Interestingly, Collier also emphasized that there could be no legal contract with Nepal even though he was selling sleepers on behalf of the Government of Nepal, and he could only promise to do his best to extract the sleepers. Collier was asked by Sir C. Hindley, Chief Commissioner of the Railways, if it would be possible to increase the supply by operating in more than one forest area, but Collier believed the best chance of increasing output would be to concentrate on one area at a time. He argued it was essential that he was on the spot himself to supervise the work, which would not be possible if there were operations in more than one area at a time.

The members of the Board were also curious if Collier could explain why "the arrangements that had proved so successful in Nepal could not be repeated in British India."[57] Collier replied that, unlike British India, Nepal contained extensive sal forests that had not already been brought under regular working by forest contractors or leased out to timber firms. In India, the still unexploited forests were mixed forests and not forests containing standard sleeper wood like sal and deodar. Moreover, in Nepal, Collier did not have any difficulty or delay in getting sanctions to carry out timber

[57] Minutes on a meeting in the Railway Board office, 28 June 1927, Railway Department (Railway Board), Stores, File No. 945-S/57-70 B, 1927, NAI, p. 16.

operations as he was authorized directly by the prime minister. Until 1925 railway funds were utilized for financing the work inside Nepal but after 1925 the internal finance was carried out by the Nepal government. Still, the railway funds were required to pay for sleepers delivered to India as Collier was provided with monthly credits which he used to make payments for delivery. Therefore, the large scale extraction of timber from the forests of Nepal Tarai was possible only because of foreign or non-Nepali capital investment and was not a consequence of significant capital investment by the Rana state itself. The Rana state, understandably, was happy to take care of the minimum, i.e., the financing of transportation of sleepers within Nepal, and reap royalty and revenue generated by capital, supervision, and labor coming from British India.

Exploiting Efficiently and Expanding Scale

The scale of operation in Nepal had grown tremendously since Chandra Shamsher first made the offer to give sleepers free of royalty in 1918. The annual supply of sleepers in 1919 was 60,000. In the 1926–1927 season the outturn was 535,000 sleepers. Explaining it to his colleagues, Collier emphasized the remarkable smoothness with which the supply of 20 lakh sleepers was achieved in the previous seven years.

Collier extracted sleepers in the Sarda Valley for three years from 1919 to 1922. On the completion of the supply of two lakh sleepers free of royalty, the Railway Board was anxious to continue the supply of sleepers, and as it was ascertained by Collier that three lakh mature sleepers could still be extracted from mature timber standing in the Sarda Valley and the scheme continued. Sleeper work in the Sarda Valley was finally completed in April 1922. By the end, O. & R. Ry. had received 469,633 sleepers at the time of serious sleeper shortage at the average cost of Rs. 7/9/2. For this extraction, Collier worked with contractors who agreed with the O. & R. Ry. to supply sleepers at an agreed price.

For Nepal, Collier argued that this was the first time the forests of Nepal were "subjected to efficient exploitation methods." Moreover, he believed that the Government of Nepal "realised for the first time the great source of revenue their forests were under efficient management."[58] Therefore, the

[58] A note regarding the past history of the Nepal Government Sleeper Operations and their future, Railway Department (Railway Board), Stores, File No. 945-S/57-70 B, 1927, NAI, p. 24.

Sarda Valley operations made it clear to the railway companies in British India that there existed a vast untapped source of sleepers in other areas of Nepal Tarai. This discovery was especially beneficial to the E.I. Ry. as it ran parallel to and a short distance away from the Nepal border. For instance, in the 1926–1927 season, a special sleeper train ran daily to Bareilly carrying 4,800 sleepers every day. As Collier noted, "more than half a million 1st class sleepers were thus received by the E.I. Ry. at one center Bareilly and this regularity and concentration must mean a considerable saving of money."[59]

Even after the completion of the Sarda Valley scheme, the Railway Board regarded the maintenance of Nepal sleeper supply important, and an agreement was reached to supply 10 lakh first class sleepers by March 1927. For this purpose, a new area in the Gogra Valley was opened under Collier's charge. At the end of 1925 when 6.5 lakh sleepers were already delivered and a balance of 3.5 lakh sleepers remained, the price of sleepers from the C.P. on which the Nepal price was based fell to Rs. 8/0/0. Following Collier's advice, the Nepal government waived the agreement that had fixed the price of the remaining 3.5 lakh sleepers at Rs. 9/8 per sleeper and agreed to reduce the price. The price of Nepal sleepers was thus reduced from Rs. 9/8 to Rs. 8/12. More importantly, it was the great inflow of Nepal sleepers that acted as a lever to keep down the price of sleepers in British India, especially the sleeper price in the Bengal-Nagpur pool like the ones from Central and United Provinces. The quality and volume of Nepali sleepers, therefore, played a key role in restructuring the South Asian timber/sleepers market. In addition, the problems of dwindling sleeper supply within British India were also ameliorated to an extent by the great flow of first class sleepers from the northern side of the Indo-Nepal border.

Regarding financing, a new arrangement was made in 1925 by Collier and the E.I. Ry. After 1925, the E.I. Ry. paid the money only upon sleepers being delivered to India. By this time Collier "had persuaded the Government of Nepal to undertake all financing of sleepers inside the Nepal territory."[60] The Nepal government's only condition for financing the work was that

[59] A note regarding the past history of the Nepal Government Sleeper Operations and their future, Railway Department (Railway Board), Stores, File No. 945-S/57-70 B, 1927, NAI, p. 24.

[60] A note regarding the past history of the Nepal Government Sleeper Operations and their future, Railway Department (Railway Board), Stores, File No. 945-S/57-70 B, 1927, NAI, p. 26

Collier would do the passing. Collier's passing, up to 20 lakh sleepers by 1927, enjoyed a high reputation with the railway companies. Collier was confident enough to state that "the whole arrangement for supply of sleepers from Nepal may be discontinued from the day on which his passing be considered unsatisfactory."[61] After the end of the agreement in 1927, the contract was renewed for a further three years until 1930, when the forests between the Sarda and Koriala Rivers that were being worked would be completed. So, the Railway Board on behalf of the Government of India promised to buy, and Collier, on behalf of the Government of Nepal, "promised to do his best" to deliver, not less than three lakh broad gauge sleepers every year.

The Railway Board regarded the maintenance of the Nepal sleeper supply as essential to its operations, not just because of the superior quality of sleepers but also because of the unfailing regularity of deliveries made daily by special trains. The Board also didn't face any shortage of Nepal sleepers when required.

Scientific Forestry and Conservation for Higher Yield

Collier left Nepal in 1930. He spent 12 years working in the forests of Nepal, first as an employee of U.P. Forest Services, and after he took early retirement as the Deputy Conservator of Forests in 1923, as a Forest Advisor to the Government of Nepal. Collier is reported to have left Nepal as a rich man after years of work extracting sleepers from the virgin forests of Nepal (Joshi 1991: 104). Collier's exit was also related to the onset of the Great Depression which led to a decline in capital expenditure on railroads. Lesser capital expenditure led to a slowdown in the expansion of route miles and unsurprisingly, the demand for sleepers also went down. On the other hand, Nepali forests, once considered inexhaustible were showing signs of heavy deforestation despite the lofty claims about efficient extraction championed by Collier. Collier never oversaw any reforestation practices and moved from one virgin forest to another selectively cutting trees to extract sleepers for the railway companies.

After Collier's exit, Nepali officials were responsible for smaller scale sleeper operations and timber extractions. By the end of the 1930s, the

[61] A note regarding the past history of the Nepal Government Sleeper Operations and their future, Railway Department (Railway Board), Stores, File No. 945-S/57-70 B, 1927, NAI, p. 27.

Nepal government was again looking for "scientific management" of its forests so that timber could be extracted on a perpetual yield basis without exhausting the forests of Tarai. The man Nepal hired for that job was E.A. Smythies. He was hired as a Forest Advisor to the Government of Nepal in 1940 for three years.[62] The decision was triggered by the outbreak of the Second World War as the output of timber from Nepal for war purposes had increased considerably (Smythies 1942: 34). He was provided with a salary of Rs. 1,250 per month, plus a commission of 2.5 percent on the value of all orders for Nepal timber and forest products obtained by Smythies from the Government of India or other railway and commercial and industrial interests in India. The demand for timber in British India had again gone up due to the Second World War.

Like Collier in 1918, Smythies also came to Nepal with a doctrine of "scientific forestry and management" and contrasted his method with the unscientific exploitation of forests. Here Smythies distinguishes his method from that followed by Nepali officials in the 1930s without any supervision of someone trained in the science of forestry. In his proposal to the Nepal government Smythies outlined three main objectives of scientific forestry and forest management:

1) To protect and improve forests, prevent landslips and erosion in the hills and floods in the plains, and conserve the rainfall and water supply.
2) To meet the requirements of the local population for forest produce such as timber, grass, grazing etc. and to increase employment and develop forest.
3) To manage the forests scientifically so as to produce *in perpetuity* [emphasis in original] the maximum sustained yield of timber and other forest products of commercial value.[63]

[62] "Agreement between the Government of Nepal and Mr. E.A. Smythies as to the appointment of latter to the position of Forest Advisor to the Government of Nepal," 14 February 1940, Serial No. 218, Pokā No. 168/4, Kṛṣi Pariṣadko Nimitta Mr. Smythies Jhikāune Bāreko Hopwood Pani, 1996 v.s., FMA. Hopwood is the name of another forest conservator the Rana state was considering but there was nothing related to him in Pokā No. 168/4.

[63] "Scientific Forestry, its objectives and organization," 14 February 1940, Serial No. 218, Pokā No. 168/4, Kṛṣi Pariṣadko Nimitta Mr. Smythies Jhikāune Bāreko

Increased revenue rather than nature conservation was at the heart of scientific forestry and management. To meet these objectives, demarcation of the forest area, survey and protection, and settlement of rights and concessions between the government and local population was considered necessary. For Smythies, the scientifically managed forest

> should first be carefully selected and permanently and clearly demarcated with pillars and boundary lines. Their area should be accurately ascertained and hence a survey and maps are required. A forest staff should gradually be built up to protect the forests from all forms of damage such as fire, creepers, un-authorised felling or clearing for cultivation etc. The requirements of the local population for forest produce (e.g., timber for their huts and carts, grazing for their cattle, thatching grass etc.) should be ascertained and recorded.[64]

Drawing insights from his experience with forestry in the U.P., Smythies told the Nepal government that communication lines such as roads, bridges, tramlines, light railways, and ropeways were instrumental in extracting forest resources and taking them to the market. This connection between commercial and industrial demands and the sites of extraction was central to scientific forestry's relationship with increased yield and revenue. Moreover, Smythies believed that the money spent on communications and export facilities would eventually pay through an increase in revenue.

Nepal's close comparison was with the forests of the U.P. where 6,000 square miles of forest was under the government control. Government forests in U.P. also had 12,000 miles of demarcated boundaries and 7,000 miles of roads and paths. Smythies pointed out that after the advent of scientific forestry in U.P., gross revenue increased from Rs. 5 lakh per annum in the decade of 1870–1880 to over Rs. 50 lakhs in the 1930s, with a net surplus of Rs. 25 lakh per annum. And making his pitch to the Nepal government, Smythies wrote:

Hopwood Pani, 1996 v.s., FMA.

[64] "Scientific Forestry, its objectives and organization," 14 February 1940, Serial No. 218, Pokā No. 168/4, Kṛṣi Pariṣadko Nimitta Mr. Smythies Jhikāune Bāreko Hopwood Pani, 1996 v.s., FMA.

> Since the forests of Nepal are believed to be *two or three times* [emphasis in the original] the area of U.P. forests, still better results should be in course of years be obtainable in Nepal [sic] by scientific management of the forests, to the benefit of the revenues of the State, and to the benefit of conditions of employment and wage earning opportunities of the people. On the other hand, experience *all over the world* [emphasis in the original] has proved again and again that without scientific forestry, the forest wealth is dissipated, the forests deteriorate, and revenue and employment (over a period of years or decades) decrease, while destructive erosion and floods increase.[65]

Scientific forestry, for Smythies, therefore could only be advantageous and start to show results if it was supported by a long term policy that assured continuity. Above all, Smythies was hired to restructure forest management in Nepal along the lines that would generate maximum revenue for the Nepal government without, however, jeopardizing the long term revenue interests.[66] Smythies worked in close consultation with the Director General of the Department of Forests, General Kaiser Shamsher. Smythies had five major duties as the Forest Advisor:

1) To advise the Nepal Government on all matters connected with Forestry and forest management policy.
2) To put up proposals regarding the executive, subordinate, and clerical staff required for the Forest Services, and after approval and sanction of such proposals by the Nepal Government to take necessary steps to recruit, train and appoint such staff.
3) To put up proposals regarding the demarcation, survey, improvement and protection of forests, and preparation of working plans and schemes, and after approval and sanction of such proposals, to take the necessary steps to carry out the same.

[65] "Scientific Forestry, its objectives and organization," 14 February 1940, Serial No. 218, Pokā a No. 168/4, Kṛṣi Pariṣadko Nimitta Mr. Smythies Jhikāune Bāreko Hopwood Pani, 1996 v.s., FMA.

[66] The Department of Forests, modeled on the Imperial Forest Service, was established in 1942 (Ranjit 2019). Previously, *Kāṭhmahal* and *Banjẽc* were the government departments responsible for timber sale and forest inspection.

4) To put up proposals for the scientific exploitation of the forests, and the development of communications, markets and industries, to increase revenue and employment, and after approval and sanction of such proposals to enter into contracts on behalf of the Nepal Government, and to take the necessary steps to carry out the proposals.
5) To prepare, for the approval and sanction of the Government, forecasts of revenue and expenditure, and to deal generally with the finances of the Forest Department, and the keeping of accounts.[67]

Smythies was given wide discretionary power to carry out his duties efficiently. He had the power to appoint staff, issue administrative orders related to the demarcation, improvement, and protection of forests, prepare communication to facilitate the export of forest products and take orders for timbers. He also had the authority to arrange contractors to deliver timber and for payment of revenue and royalty. Smythies saw Nepal as where India had been 70 years ago, which is why he argued that the application of scientific forestry methods would enable Nepal to tap enormous riches locked away in its forests from which adequate revenue was not obtained at present. Here Smythies was suggesting that British India's experience was something to be emulated in Nepal under the powerful Forest Department. He was convinced that regular forest policy, organization, and communication would most certainly change that. His advice to the Nepal government was to adopt policies implemented by the Government of India which "built up one of the most efficient and profitable Forest Administration in the world."[68]

The Nepal government put Smythies in charge of a scheme for the scientific management of sal forests between Amlekhganj and Jaynagar on a perpetual yield basis in east-central Tarai for three years from 1940 to 1943. According to this scheme, the total working area was divided into 15

[67] "Notes on the Possible Appointment of an Inspector General of Forests in Nepal," Serial No. 218, Pokā No. 168/4, Kṛṣi Pariṣadko Nimitta Mr. Smythies Jhikāune Bāreko Hopwood Pani, 1996 v.s., FMA.

[68] "Notes on the Possible Appointment of an Inspector General of Forests in Nepal," Serial No. 218, Pokā No. 168/4, Kṛṣi Pariṣadko Nimitta Mr. Smythies Jhikāune Bāreko Hopwood Pani, 1996 v.s., FMA.

blocks and one block was to be taken every year for felling half the number of sal trees, as well as other saleable timber such as Asna of over 5 inch girth. The plan was to have a new cycle of felling every 15 years and the process repeated indefinitely. Such was the ambition of those schooled in the science of forest management.

Prevention of unauthorized felling of trees was another challenge for Smythies and the Department of Forests. His experience in the U.P. had shown him that without close and careful supervision, contractors were prone to fell more trees than were marked or paid for. This would result in fewer trees in the next cycle of felling and hence jeopardize the whole scheme as well as the revenue of the state. Therefore, Smythies emphasized to the Nepal government the importance of constant supervision and patrolling. Prevention or careful management of forest fires was equally important and the forests were especially vulnerable after a felling season that left lots of felling refuse on the ground. According to Smythies,

> This is very essential to enable the young sal plants, with which the Nepal forests are full, to grow up and develop, to improve the forests, their yield and revenue, in future. After a period of years of *successful* [emphasis in the original] fire protection, (possibly 10 or 12 years) the young sal plants will have developed into young poles, and early burning can again be carried out if considered advisable. Fires immediately after fellings are very fierce owing to the enormous amount of felling refuse on the ground, and such fires naturally do great harm to the forest.[69]

In India, Indian foresters practiced the concept of the fire line which was key to forest protection. It referred to a road cleared of grass that was kept around a forest. A fire line with a sufficient width prevents a flaming canopy from spreading from one side to the other. Moreover, "the width of the fire line also depended on the direction of the prevailing wind. … A belt of evergreen trees running along the edge aided the effectiveness of the fire line" (Barton 2002: 87). Valuable forests, therefore, required wider

[69] "Scheme for the Scientific Management of Sal Forests between Amlekhganj-Jaynagar on a Perpetual Yield Basis," Serial No. 218, Pokā No. 168/4, Kṛṣi Pariṣadko Nimitta Mr. Smythies Jhikāune Bāreko Hopwood Pani, 1996 v.s., FMA.

fire lines as a line of defense. In the context of Nepal, the whole point of scientific management of sal forests, Smythies emphasized was to steadily increase revenue over the course of many years, decrease wages on labor, and propel industrial development. Political changes in the subcontinent after the Second World War made long term planning and its implementation more challenging. However, we do notice the slow rise of more technocratic management of state forests in Nepal with the intervention of British forest officials like Collier and Smythies. Even some Nepali students were getting trained at the Forest School in Dehradun and getting trained in the logic of scientific forest management and efficient exploitation of forest resources.[70]

Conclusion

The period after the Great War saw the introduction of a new regime when it came to extracting sleepers from the forests of Nepal Tarai. New areas were opened up for extraction and the scale of exploitation also expanded significantly. Tarai forests had never before been exploited in such a systematic, expansive, and prolonged way. Contractors, officers like Collier and Smythies, and the ruling Rana elites pocketed great wealth from the export of sleepers from the Tarai. For the Rana elites, the opportunity for wealth generation on this scale was the consequence of the introduction of capitalist/imperialist regimes of extraction and exploitation of natural resources. In that sense, as Mishra noted in his review of Regmi, the Nepali state from the 19th century onwards, if not earlier, was a crucible of regional and global capitalist and imperialist interests (Mishra 1985: 125). A capitalist enterprise like sleeper operations was limited to the exploitation of natural resources and primary products and did not pave the way for the establishment of major processing and other industries or even significant transportation infrastructure in its wake. Whatever railway lines were laid down were to facilitate the smooth delivery of sleepers from forests to the nearest railhead in British India, not to promote facilities for the movement of people and goods within Nepal. Large scale timber extraction in Nepal began just when the British Empire and international capital were facing the problem of capital accumulation made acute by the Great War. But the

[70] A Nepali student was admitted in a Forest Ranger College in Dehradun in 1938. In 1948, four Nepali students were sent to Dehradun for Ranger course and two for Forest Service course. Nepal government had also already established Nepal Forestry Institute under the Department of Forests in 1947 (Adhikari 2078 v.s.).

extraction of forests continued even after the end of the war and the work continued throughout the 1920s. Nepali forest resources were exploited to maintain the working of a key mechanism of capital accumulation—railways—in British India when supplies from other sources were dwindling. To make such extraction possible, age old forests in Nepal's Tarai were opened up to a modern forestry science that was driven more by the prospect of perpetual yield (which failed to materialize at a scale imagined by Collier and Smythies) than nature conservation.[71] Perhaps the opening of the forests in Tarai was not threatening to the Rana rulers of Nepal because of the marginal space it occupied in the ruling elites' cultural imagination more as a possession or *muluk* rather than *deś* or *deśa* (Burghart 1984).[72]

The Tarai represented a space that was not of tremendous significance, culturally or spiritually, both to the Ranas and the British Raj except for the natural riches like timber and animals it housed. Therefore, the forested belt of the Tarai was seen as a "sacrifice zone" by both the officers of the Raj and the Rana elites of Kathmandu. As with Gurkha soldiers, the sal forests of the Tarai also carried the burden of Nepali sovereignty and the special relationship between Nepal and British India (Sharma 2023). One also wonders if Chandra Shamsher's willingness to allow the Indian railway interests and capital easy access to the sal forests of the Tarai for sleepers played any role in what is seen as the most significant achievement of Chandra's long rule, the Nepal-Britain Treaty of 1923 that fully acknowledged Nepal's independent and sovereign status (Husain 1970). It is possible that in a world subsumed to a logic of ever expanding capital, a formal recognition of sovereignty comes together with a decline in actual sovereign power of peripheral states. More importantly, with its vast natural riches, Tarai was a "spatial fix" not just to the problem of capital accumulation but also a solution to the problem of revenue for Nepali rulers as sizeable revenue went into the Rana coffers from the sale of sal sleepers throughout the 1920s.

[71] The Rana state did preserve some areas of Tarai like Chitwan for big game hunting. In these areas, the animals and indigenous Tharu laborers, without whose work and skills hunting diplomacy would not have been possible, bore the burnt of an imperial pastime.

[72] One historian, however, writes that Burghart's categorical distinction between different realms "is not much supported by the administrative and legislative records" (Rupakheti 2017: 81, f.n. 6).

On the other hand, the emergence of scientific forest management in Nepal in the interwar period was the result of concern over declining timber yield in the subcontinent and was driven by a need to ensure a regular supply of timber for export. Selective cutting was adopted to keep the forest sizably intact for future needs. Efficient logging and sawing were then facilitated by reliable transportation. Therefore, any such environmentally sensitive innovation and practices were ultimately aimed towards ensuring sustained yield, i.e., fulfilling present demands without endangering future needs. Therefore, the minimum age at which the most important timber trees could be felled was initially set at 100 years. The rule was relaxed nevertheless once majestic old trees started to decline while the demand for timber did not. As Collier noted pithily in his essay on forestry in Nepal, "the question of exploitation cannot be separated from that of conservation" (Collier 1928: 254). And as the long experience of imperial forestry in British India had shown conservancy meant "forests became a crop of trees that were selectively harvested through scientific forestry to meet timber needs of the railways" (Das 2015: 69). Such an ambitious plan to swiftly restructure forestry in Nepal did not go as envisioned by the likes of Collier and Smythies because of major political changes in India and subsequently in Nepal. Nevertheless, the idea that forests should be managed by those trained in the school of scientific forestry was getting established in Nepal too as evident in the course of forest management in the decades that followed the end of the Rana rule. With the nationalization of forests in 1957 the Nepali state saw itself as the sole agency to manage and protect forests not just in the Tarai but in the hills as well (Adhikari and Dhungana 2010).

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