RE-INVENTING DARJEELING HIMALAYAN RAILWAYS
Studying the Political Ecology of an UNESCO World Heritage Site

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ABSTRACT

India’s passage into modernity, to a significant extent, was centered on the transportation system; hence a proper planning is desired. Darjeeling Himalayan Railways in West Bengal has been a traditional heritage for the state, where the tourism and natural beauty had earned their own names with the collaboration of the Darjeeling Himalayan Tramways, later known as trainway. Planning began in 1839, to lay out the Darjeeling Town, and construct a hill road connecting Siliguri, Pankhabari, Kurseong and Darjeeling. To meet the expanding requirements, a new road fit for carts was planned in 1861. Subsequently, in 1879, the Darjeeling Himalayan Railway (DHR) was constructed on the same hill cart road. Over the years, its cultural, social and economic value has heightened to such an extent that UNESCO has made it a World Heritage Site. However in the contemporary globalized world with the importance of time and speed, the DHR is fading out on its importance. Further, the ‘Political Ecology’ of Darjeeling has also an interlinked relationship with the social, economic and biological parameters of the region. Therefore, the present research emphasizes the dire need of re-inventing the DHR with the latest technology. To have a better understanding, the physical, economic and technological challenges of ‘The Darjeeling Himalayan Railways’ have also been analyzed with a focus on the conservation measures taken by the UNESCO, and initiatives taken at the government level.

The methodologies, involved in this are ethnography based discussions, through questionnaire and interviews, leading to interesting research findings. The survey was carried out in different locations within Darjeeling district, adjacent to the DHR line, to get variable and comparable answers that could be compared to draw a clear view, supported by number of photographs. The
aim was to throw light on the future prospects of this UNESCO World Heritage Site as well as how the Darjeeling Himalayan Railways is negotiating with the politico-ecological relationships between human society and its bio-cultural-political complexity.

The findings reveal that ‘DHR is a fragile living heritage’. Every year crores of rupees are spent to restore the line from damage following a natural calamity. Many more crores are spent to maintain its assets and to pay salaries to employees. Like many passenger railways the DHR is not a profitable proposition. It can barely recover the cost of fuel, and overall cost recovery is about 10%. This led DHR to be considered as an ‘un-economic branch line’. For its continued survival, DHR demands sensitization and appreciation of its problems and challenges by its stakeholders. Innovative approaches rather than routine railway policies and procedures are needed within the management systems, to address the issues related with the conservation of this magnificent living heritage, and that will be the key concern on this research.

Keywords: - Political Ecology, Darjeeling Himalayan Railway, UNESCO World Heritage Site, Living Heritage

INTRODUCTION

A big locomotive has pulled into town,
Heavy, humungus, with sweat rolling down,
A plump jumbo olive.
Huffing and puffing and panting and smelly,
Fire belches forth from her fat cast iron belly.

Poof, how she's burning,
Oof, how she's boiling,
Puff, how she's churning,
Huff, how she's toiling.

She's fully exhausted and all out of breath,
Yet the coalman continues to stoke her to death.

Julian Tuwim

The Darjeeling Himalayan Railway (DHR), nicknamed the "Toy Train", is a 2 ft (610 mm) narrow gauge railway from Siliguri to Darjeeling connecting two districts, Jalpaiguri and Darjeeling, in the Indian state of West Bengal, run by the Indian Railways.

The DHR is the very first hill railway in India, and one of the first ones in the world (the Simmering Railway, constructed between 1848 and 1854, was the first). Established since 1881, the “toy train” is operating and retaining most of its original features and values until today. In the mid19th century, the British rulers built a recovery home away from home in the Himalayan city Darjeeling where the stress of colonial rule and the hot Indian climate could be put away for the summer. A sanatorium and a military depot were set up. The soft climate was not only good for recreation but also supporting extensive tea growing and plantation. Subsequently, Darjeeling became a well-known new British settlement and trading point for tea. Increasing traffic by people and commodities overstressed the existing cartroad and a new transportation system was required. With times Darjeeling, the queen city of Himalaya became a major tourist spot and DHR became a father on the crown of this queen city.
Political ecology analyses social forms and human organisation that interact with the environment. This burgeoning field has attracted scholars from the fields of anthropology, forestry, development studies, environmental sociology, environmental history, and geography. Its practitioners all query the relationship between economics, politics, and nature. Notwithstanding their varied background, these studies promote fundamental changes in the management of nature and the rights of people.

Political ecology is at the confluence between ecologically rooted social science and the principles of political economy. It explicitly aims to represent an alternative to apolitical ecology (Forsyth, 2008). The field synthesises the central questions asked by the social sciences about the relations between human society and its biocultural-political complexity, and a significantly humanised nature.

Choosing the topic “Darjeeling Himalayan Railways – Studying the Political Ecology of a UNESCO World Heritage Site” has its own significance. The Darjeeling Himalayan Railway is the first, and still the most outstanding example of a hill passenger Railway. Opened in 1881, it applied bold and ingenious engineering solutions to the problem of establishing an effective rail link across a mountainous terrain of great beauty. It is still fully operational and retains most of its original features intact. Moreover this railway has a great impact towards the local economy and to the social life of the local people. But now this railway is facing a lot of problems regarding engineering, economical, speed-issue act. All these arose the dormant wish of mine to work which finally has taken the shape in its paper form.

Study Area:
Darjeeling hill areas are unique from environmental Eco-perception. The relief varies from 100 Mts. above sea level to the mighty Kanchenjunga. There are different climatic zones with distinctive attributes and there are endangered animals like red panda etc along with memory orchids and medicinal plants are available in this hilly region. The Darjeeling hill area is formed of comparatively recent rock structure that has a direct bearing on landslides. The causes of the landslides vary from one locality to another. Heavy monsoon precipitation is however a very common cause of these disasters. More over soils of Darjeeling hill areas are extremely varied, depending on elevation, degree of slope, negative cover and obviously geo-lithology. The natural system of erosion in the hill gets more complicated when man interferes. As the mountains serve as the source of resources for the population residing in the hills as well as in the plains, the form of environmental degradation is quite extensive and is applied to the extraction of timber and other forest produces, as well as mining and agriculture. As human population expands in the hills, forests are being depleted for the extension of agricultural lands, introduction of new settlements, roadways etc. The growing changes coming in the wake of urbanization and industrialization leave deep impression on the hill ecosystem, disrupting normal functioning. Due to unprecedented growth of population during the last few decades in the Darjeeling hill areas, nature has started reacting sharply to the accumulated human guilt. Landslide hazards, especially during rainy season have become a common factor to the people of the hill. The Hill areas of Darjeeling District are located within the Lesser and Sub Himalayan
IMPORTANT MAPS OF DARJEELING

1: Relief map of Darjeeling
2: Satellite Imagery of Darjeeling and Siliguri sub-division
3: Land-use and Land Suitability map of Darjeeling
4: Geological Map of Darjeeling
5: Population Distribution:
belts of the Eastern Himalayas. The area is bounded by the Sikkim Himalaya in the north, the Bhutan Himalaya in the east and Nepal Himalaya in the west. The southern foothill belt is demarcated by a highly dissipated platform of terrace deposits extending along the east west axis. The inner belt is defined by a ridgeline stretching from the Darjeeling Hill to the west and Kalimpong Hill to the east, overlooking the southerly flowing Tista valley in between. Prominent rivulets contributing to the Rammam-Rangitbasin, dissipate the northern slope of Darjeeling Hills. The Kalimpong Hill is rather rugged in topography and is dissipated by radically descending gullies and streams that contribute to the Tista and Jaldhaka River system.

Aim & Objectives of Study:

Aim of Study:

The specific aim of this dissertation is to have a **proper and in depth knowledge** on the traditional rich Himalayan Railway heritage of Bengal, the present scenario associated with it and **uprising problems** encountering it and finally to know the **underlying facts/ strategies** aimed at surviving or boosting it up. **Case study** on this part has been taken on Darjeeling Himalayan Railways, previously known as Darjeeling Himalayan Tramways which hold up their own **eminent position not only on the national railway map but also in local tourism economy and are recognized as UNESCO World Heritage Site.**

Objectives of Study:

The **major objective** of the study is;

- To analyze the gradual evolution of Darjeeling Himalayan Railways, and its social impact to sustain the political ecology.
Research Methodology and Database:

There are two kinds of methodology undertaken in the present dissertation: **Primary Data Collection** and, **Secondary Sources of Data** Primary Data refers to the data that one has collected using his/her own efforts whereas, the Secondary sources of data has been already collected by another party. Secondary data can usually be assessed through published/ electronic from.

**Process:**

**Questionnaire** - In the present dissertation work, the questionnaire comprises of both Quantitative and Qualitative aspect of the area. A questionnaire is the Research Instrument consisting of a series of questions and other prods for the purpose of gathering information from respondents. Ethnographic techniques are also used in the time of research. They are inexpensive, quick and easy to analyze.

Besides the Secondary sources of information, interactions through personal interviews with the railway officials/ managements and staffs of the DHR, hotel managers, train passengers, local people, local business persons, Government officials etc. have been made a view of having primary data in formation.

**Construction of the DHR in the late 19th century:**

Siliguri, located at the base of the Himalayas, was connected with Calcutta (now Kolkata) by broad gauge railway in 1878. Between Siliguri and Darjeeling Tonga services ran on a cart road (the present day Hill Cart Road). Franklin Prestage, an agent of Eastern Bengal Railway Company approached the government with a proposal of laying a steam tramway from Siliguri to Darjeeling. Sir Ashley Eden, the Lieutenant Governor of Bengal, formed a committee to assess the feasibility of the project. The proposal was accepted in 1879 following the positive report of the committee. Construction started the same year.

Gillanders Arbuthnot & Company was given the responsibility of construction. By March 1880, the line was extended up to Tindharia. Lord Lytton, the first Viceroy to visit Darjeeling was
conveyed in the train up to Tindharia. The stretch from Siliguri to Kurseong was opened on 23 August 1880. The Siliguri to Darjeeling track was inaugurated on 4 July 1881. The name of the rail company was promptly changed to Darjeeling Himalayan Railway Company. Initially the alignment of the railroad followed Hill Cart Road. However, it became apparent that in some areas the steepness of the road was more than the locomotives could easily maneuver. In 1882 four loops and four reverses (zig-zags) were constructed between Sukna and Gayabari to ease the gradient. The line was extended by a quarter of mile to Darjeeling Bazar in 1886. The Darjeeling station was renovated in 1891 while Kurseong got a new station building and storage shed in 1896. Darjeeling Himalayan Railway (DHR) suffered from an earthquake in 1897 and a major cyclone in 1899.

2.1.2. The development of the DHR in the 20th century:

By 1909–1910, DHR was carrying 174,000 passengers and 47,000 tons of goods annually. The first bogie carriages entered service, replacing very basic 4 wheel carriages. DHR extension lines were constructed up to Kishanganj in 1914, and Gielkhola in 1915. At Tindharia the railway works were relocated from behind the loco shed to a new and extensive site.

The Batasia Loop was constructed in 1919, eliminating problems by creating easier gradients on the ascent from Darjeeling. However, DHR started to face competition from bus services that started operating in the Hill Cart Road, and took less time than the railway to reach Darjeeling.
In 1934, a major earthquake in Bihar shook all of Northeast India. Many buildings in Darjeeling were heavily damaged and the railway was also badly affected, although it soon recovered and played a vital role in transporting repair materials. During World War 2, DHR played a vital role transporting military personnel and supplies to the numerous camps around Ghum and Darjeeling.

After the Independence of India, DHR was purchased by the Indian Government and was absorbed into the Indian Government Railways organization. DHR came under the management of the Assam Railways organization. In 1952, Assam Railway, including DHR, became part of the North Eastern Railway Zone and later in 1958, a part of the Northeast Frontier Railway Zone of Indian Railway. In 1962, the line was realigned at Siliguri and extended by nearly 4 miles (6 km) to New Jalpaiguri (NJP) to meet the new broad gauge line there. It opened for freight that year and for passengers in 1964. The loco shed and carriage depot at Siliguri Junction were relocated to NJP.

DHR remained closed for 18 months during the hostile period of Gorkhaland Movement in 1988–1989. DHR was declared a World Heritage Site by UNESCO in 1999, becoming only the second railway in the world to have this honour bestowed upon it, the first one being Semmering Railway of Austria in 1998.

2.1.3. A description from 1920s:

The Darjeeling Himalayan Railway has long been viewed with affection and enthusiasm by travellers to the region, and the Earl of Ronaldshay gave the following description of a journey in the early 1920s:

Map 6: Mental map showing the main passing stations of DHR
"Siliguri is palpably a place of meeting.[.....] The discovery that here the metre gauge system ends and the two foot gauge of the Darjeeling Himalayan railway begins, confirms what all these things hint at.[....] One steps into a railway carriage which might easily be mistaken for a toy, and the whimsical idea seizes hold of one that one has accidentally stumbled into Lilliput. With a noisy fuss out of all proportion to its size the engine gives a jerk and starts.[...] No special mechanical device such as a rack is employed unless, indeed, one can so describe the squat and stolid hill man who sits perched over the forward buffers of the engine and scatters sand on the rails when the wheels of the engine lose their grip of the metals and race, with the noise of a giant spring running down when the control has been removed. Sometimes we cross our own track after completing the circuit of a cone, at others we zigzag backwards and forwards; but always we climb at a steady gradient so steady that if one embarks in a trolley at Ghum, the highest point on the line, the initial push supplies all the energy necessary to carry one to the bottom."

Figure 6: Personal Sketch of the parts of the DHR
Remarkable Engineering Devices on an Indian Mountain Railway:

THE Darjeeling Himalayan Railway is one of the engineering feats of the world. Although the steepness of the gradients on this narrow gauge line is eclipsed in other parts of the world and the 7,407 ft. altitude of the summit at Ghoom station is less than half the height of some of the summits described on the page, "The Magic of the Andes." The achievement of the engineers who built the line more than half a century ago is a noteworthy one in the history of railways.

This little railway has a gauge of 2 ft. and a length of fifty-one miles, with steep gradients and amazing loops. It climbs from the plains—which are most oppressive in the hot weather—to the coolness of the "hills," as British residents in India call the lower slopes of the Himalayas on which are situated the towns, or "stations," to which they go periodically to preserve their health.

At one time the journey from Calcutta to Darjeeling was an exhausting one involving many changes. The passenger went by train to Sahebgunge, 219 miles distant. Here a bullock cart had

Figure 7: Sketch showing the Route Profile of the DHR
to be taken to the River Ganges, at a point opposite DingraGhat. After the river was crossed, by means of a steam ferry, to Carragola, another bullock cart journey ensued to Purneah and Siliguri, over a hundred miles from Sahebgunge. At Siliguri the ascent began to Darjeeling. The whole journey took from five to six days. In 1878 the Northern Bengal State Railway was opened, reducing the time of the journey to less than twenty-four hours. The mail train from Calcutta left the terminus of the Eastern Bengal State Railway and ran 116 miles to Damookdeah, on the Ganges, where passengers and mails were taken across the river by ferry steamer to Sara Ghat, on the northern bank. From Sara Ghat the railway went on to Siliguri, a distance of 196 miles.

In those days dinner—the fish course of which was "strongly recommended"—was served aboard the ferry, and the vagaries of the great river made the crossing interesting. Since the river was constantly cutting away the bank at one place and increasing it at another, the points of departure on one side and of arrival on the other had frequently to be altered, sometimes by as much as several miles. As an aid to navigation of the ferry steamer at night, small boats were moored in the river, showing colored lights. In after years the Ganges was bridged to carry the line from Calcutta to Siliguri, and the Eastern Bengal State Railway now operates the territory formerly served by the Northern line. The Hardinge Bridge, which spans the river, was opened in 1917, connecting the 5 ft. 6 in. gauge lines of the system south of the Ganges with the meter gauge lines on the northern bank. It comprises fifteen girder spans of 345 ft. 11/2 in., with three land spans of 75 ft. at either end.

It is at Siliguri that the Darjeeling Himalayan Railway begins its remarkable journey to Darjeeling. Before the railway was built, a first-class road, built by the Government at a cost of £6,000 a mile, wound upwards to Darjeeling. In March, 1878, a scheme for the construction of the railway was drawn up, and estimates and plans were submitted to the Lieutenant Governor of Bengal, who gave it his support. The money for the enterprise was subscribed almost entirely in India. The Government undertook to maintain the
cartroad, the route of which was to be followed by the railway, and guaranteed that the gross receipts of the railway should not fall below a certain figure.

The cartroad, about forty miles long, some 25 ft. wide, and metalled throughout, was used by pack ponies, pack bullocks, bullock carts, palkee gharries, and pony tongas. The construction of the railway considerably reduced the cost of fares and transport, and made the benefits of a "hill climate" available to the poorer European who had to work and live on the plains of Bengal.

The building of the railway aroused great interest in India. Work began in May, 1879, and in March, 1880, the Viceroy of India, Lord Lytton, travelled on a train as far as the eighteenth mile, which was then the limit of the line. In the following August the line was opened for passenger and goods traffic as far as Kurseong, 4,864 ft. above the sea and thirty-two miles from Siliguri. In July, 1881, the line was opened throughout to Darjeeling station.

Siliguri lies 398 ft. above sea level. The summit at Ghoom, forty-seven miles from Siliguri, has an altitude of 7,407 ft., that of Darjeeling being 6,812 ft. As the line had to rise over 7,000 ft. in less than fifty miles, steep gradients and sharp curves were unavoidable. The surveyors plotted banks ranging from 1 in 19 to 1 in 36 3/4, and curves of 50 ft. radius. Later, however, these were eased, the sharpest curve being 69 1/2 ft., the steepest short gradient being 1 in 23, and the steepest average gradient about 1 in 29.

The fact that it was decided to work the line by adhesion on the narrow gauge of 2 ft. restricted the weight of the trains, but there is nothing of a "toy railway" about the construction of the line or about the amount of passenger and goods traffic that it carries. Steel rails weighing 41 1/4 lb. per yard were laid on wooden sleepers.

For the first seven miles from Siliguri station the gradient was easy, the ascent to Sookna station (533 ft.) being at 1 in 281. The heaviest piece of work in this section was the erection of a steel bridge, 700 ft. long, in seven 100 ft. spans, across the
Mahanuddy River. This river has its source in the line of mountains ahead of the traveler known as the Mahaldirum Range, with an altitude of about 7,000 ft. The river at this point forms a boundary between the Terai, the jungle tract at the foot of the Himalayas, and the district of Jolpaiguri. It is a tributary of the Ganges. The train passes streams and tea gardens on the way to Sookna. When the jungle was being cleared the area was fatal to many Europeans, many died from fever.

Soon after Rungtong station the line turns nearly south on to a long spur where another spiral is encountered. This spiral begins just before the fourteenth milepost, and is one of the most complicated and interesting pieces of engineering on the railway. From Rungtong the line has to ascend to Tindharia station (2,822 ft.) in less than eight miles, the average gradient for this section being 1 in 28 3/4. To overcome a sudden rise of 137 ft., there is practically a double loop, the outstanding feature of which is a sharp curvature introduced to fit the alinement to the situation. This second loop is a fine feat of engineering. The track, now returning northwards and eastwards for a short distance, runs along the old road, but gradually passes below it, until the third loop is reached at the sixteenth milepost. Fine views are afforded of the valley below, the Bhutan Range to the eastward, and the adjacent hills and valleys. In the plains to the southeast can be seen the Teesta River, with an island called Tiger Island, because three tigers were once shot during one "beat" there. The river has its source in the Tibetan Lake Chalamu, which
is 17,000 ft. above sea level, and about seventy-four miles northeast of Darjeeling.

At the eighteenth mile the country presented such difficulties that a spiral was impracticable, and a reverse had to be adopted. At an altitude of 2,438 ft., the line, climbing at 1 in 28, enters a curve of 800 ft. radius, followed by one of 400 ft. radius, and reaches a dead-end at 2,473 ft. It then backs up a second leg, rising at 1 in 33 round curves of 400 ft. and 200 ft. radius respectively, to a second dead-end at 2,501 ft. Another climb at 1 in 28 round a curve of 400 ft. radius brings the train to 2,536 ft., so that by means of the reverse or zigzag a total vertical lift of 98 ft. is accomplished.

Tindharia station is considered to be above the Terai fever level. The workshops of the company are here. In the section of just under four miles between Tindharia and Gayabari stations the heaviest average gradient, 1 in 28.3/4, has to be faced. After a zigzag outside Tindharia station comes the fourth and final spiral or loop. This is generally regarded as the most sensational spot on the line, and is called "Agony Point." It represents the ascent of another of the conical spurs which are common in the locality. Originally there was so little room that on the upper part of the loop a curve of 591/2 ft. radius had to be described, the train practically overhanging the
hillside at this point, but improvements were carried out later and the curve was somewhat eased.

The train passes "Agony Point" and proceeds, encountering another zigzag just before Gayabari station. The station stands at an altitude of 3,516 ft. Just beyond it the fourth and last zigzag, or reverse, is negotiated, and the gradient becomes slightly easier, 1 in 32 for the succeeding four miles to Mahanuddy, 4,120 ft. above sea level and twenty-seven miles from Siliguri. In the gorges below, it is said that a Nepalese headman in charge of men working on the road to Darjeeling shot a large Himalayan bear. As he had no lead for bullets, he used copper coins.

A stream called the "Mad Torrent" marks the hallayway distance to Darjeeling. At the twenty-seventh mile the train passes a precipitous rock face where the road was blasted out, in some places for a depth of 50 ft. Near Mahanuddy station is a waterfall with a drop of 150 ft., which is the source of the Mahanuddy River. The gradient eases to 1 in 32 1/2, and the train proceeds westwards towards Kurseong station, which is at an altitude of 4,864 ft. Before the station is reached some bluff rocks are passed. The town is of some importance, and has a considerable trade. There are some splendid views of the plains from the heights near the town.

After leaving Kurseong the grade stiffens slightly to 1 in 31 to Toong station, a distance of about five miles. After Toong the gradient increases to 1 in 29 1/2 for the five miles to Sonada, 6,552 ft. above the sea and fortyone miles from Siliguri. Then comes the easiest section of the mountain climb, about six miles long, to Ghoom, the summit, which is 7,407 ft. above sea level, and forty-seven miles from Siliguri. The gradient cases to 1 in 36 3/4, and the line passes through magnificent forests.

Figure 15: Kurseong station in the 1940s
It is now only about four miles to Darjeeling, the altitude of which is 6,812 ft.; But on this section is found the steepest short gradient, the descent being made at an average of 1 in 31 1/2, but with a short bank of about three quarters of a mile at approximately 1 in 23.

When the line was first opened engines weighing about eight tons were used, capable of hauling a load often tons up the maximum gradients of 1 in 19 and round the sharpest curves. But when the banks were reduced, more powerful locomotives were put into service. These weighed twelve tons and could haul twenty-seven tons up gradients of 1 in 25. The next step was the introduction of locomotives weighing fourteen tons and capable of hauling fifty tons up a similar bank. At the time of writing there are twenty-seven engines of the fourteen tons type, one weighing twelve tons, and one weighing twenty-eight tons. There are two rail motors which seat fourteen passengers.

The rolling stock is necessarily on a small scale. First-class carriages are 13 ft. long, 6 ft. wide, and 71/2 ft. from rail level to roof. They are fitted with 191/2 in. wheels, and the floor is set very low. There are also open trollies, fitted with hoods and curtains for protection against bad weather. Baggage and goods are carried in covered trucks. The maximum speeds going up are twelve miles an hour, and nine miles an hour descending.

At one time tea was the principal commodity carried, but cereals now take pride of place. In the year ended March 31, 1934, the tonnage of goods totaled nearly 80,000, rice accounting for nearly 20,000 tons of this.
2.1.5. Darjeeling Toy Train Route & the Journey:

Toy Trains of Darjeeling Himalayan Railway (DHR) run along narrow gauge track passing through some of the most scenic mountain routes in the world. It has been recognized as a UNESCO World Heritage Site since December 1999.

Figure 18: UNESCO World Heritage Sites Criterion Selection

The journey offers breathtaking views of the mountains, valleys, forests, tea gardens and local villages on the way. Known as one of the engineering marvels, the toy train track has several zigzags and loops on the way that helps the train to negotiate steep gradients. And there are a number of small stations along the way.

Ghoom is the highest point on the route at an altitude of 7,404 ft. This is the highest railway station in Asia and second highest in the world. As the train has to ascend to such a height in about 80kms distance, there are sharp gradients, bends & curves on the way. The sharpest curve has a radius of 69 feet. Mark Twain once came to Darjeeling in 1896. After his trip by the DHR Toy Train, he remarked "It is the most enjoyable day I have spent on earth."
The toy train for Darjeeling starts at the New Jalpaiguri Railway Station (NJP) and goes all the way to Darjeeling travelling a distance of 88kms. There are of course short joy rides and other short distance connections. In most part the railway track runs parallel with the Hill Cart Road and at many points even crisscrosses it.

For the NJP to Darjeeling route, the earlier steam engine has been now replaced with diesel engine which is more powerful and faster. The steam engine hauled toy train took more than 10 hours to reach Darjeeling from NJP. The diesel loco hauled train takes about 7 hours 15 minutes. Check out Toy Train Rides & Services for all the services of DHR including the joyrides.

2.2 Role of the Darjeeling Himalayan Railways to Sustain Political Ecology:

As a definition of Political ecology we can say, it analyses social forms and human organisation that interact with the environment. This burgeoning field has attracted scholars from the fields of anthropology, forestry, development studies, environmental sociology, environmental history, and geography. To understand how the Darjeeling Himalayan Railways sustain the political ecology, the local condition of Darjeeling Himalayan Railways is explained from the perspective of different scholars.

**Anthropology** is the study of humans, past and present. To understand the full sweep and complexity of cultures across all of human history, anthropology draws and builds upon knowledge from the social and biological sciences as well as the humanities and physical sciences. **Forestry** is the science, art, and craft of creating, managing, using, conserving, and repairing forests and associated resources, in a sustainable manner, to meet desired goals, needs, and values for human benefit. Forestry is practiced in plantations and natural stands. The challenge of forestry is to create systems that are socially accepted while sustaining the resource and any other resources that might be affected. The forest science has elements that belong to the biological, physical, social, political and managerial sciences. **Development Studies** is an interdisciplinary concentration whose main mission is to provide students with the knowledge, critical perspectives and skills they need to engage with the issues and problems of national and international development, especially as they relate to the Global South. **Environmental sociology** is typically defined as the sociological study of societal-environmental interactions, although this definition immediately presents the perhaps insolvable problem of separating
human cultures from the rest of the **environment**. **Environmental history** is the study of human interaction with the natural world over time. In contrast to other **historical** disciplines, it emphasizes the active role nature plays in influencing human affairs. **Environmental** historians study how humans both shape their **environment** and are shaped by it. **Geography** (from Greek, geographia, "earth description") is a field of science dedicated to the study of the lands, the features, the inhabitants, and the phenomena of the Earth. A literal translation would be "to describe or write about the Earth". Now we will explain the role of Darjeeling Himalayan railway from these perspectives.

### 2.2.1 Political Ecology & Darjeeling Himalayan Railway:

If intangible heritage is about skills and techniques and the popular memory transmitted from generation to generation, providing people with a sense of identity, mountain railways figure definitively in the national intangible heritage list of India. When the Darjeeling Himalayan Railway, inscribed as one of the UNESCO World Heritage Sites in 1999, started running in the 1880’s, it was the beginning of a new economic and social life for the surrounding communities. Linking villages to villages, the trains carried millions of peoples and inspired stories and songs that remain still alive among our memories. This is why the mountain railways, in addition to being a special industrial relic, occupy such a special place within the national heritage of India.

**Darjeeling Himalayan Railway: A Living Heritage:**

Darjeeling Himalayan Railway is a 2 feet (610mm) gauge railway that travels 88 km from the plains of Siliguri in West Bengal along Hill Cart Road to reach Ghum at 7407 feet before descending down to 6812 feet to arrive its destination, Darjeeling. When it was built in 1881, the engineers pushed technology to the limit of what a conventional locomotive, relying on adhesion alone, was capable of at that time.
The engineers also used techniques such as loops, where the train quickly gains height by traversing around a spiral similar to a spiral staircase; and Z-reverses where it goes backward and then forward to overcome the difficulties of the terrain. DHR has six such Z-reverses and three loops, of which Batasia loop near Darjeeling is most famous. The steam locomotives feature short wheelbase that allow them to negotiate sharp radius in the line easily. These innovative measures allowed the DHR to be constructed without the need for heavy engineering works such as tunnels and bridges. These technological ensembles like loops, reverses, steam locomotives, sharp curves etc. provide the tangible contexts to the magnificent living heritage or intangible cultural heritage of DHR.

DHR is a roadside tramway and thus is interlaced with the people on a much larger scale than any other railway. The direct result of its construction in 1880’s was the expansion of the local economy due to faster and cheaper links with the plains and Calcutta. Villages grew up along the line, the tea estates constructed their own sidings and go-downs or warehouses, tourism flourished as people escaped to the hills from the summer heat of Calcutta and residential schools blossomed in Darjeeling and Kurseong. The tea go-downs at Tindharia, Kurseong and Mahanadi are silent exhibits of the once flourishing transportation of tea by rail. The railway link to the private siding owned by Mahanadi tea estate still depicts linkages between tea industry and railway. The Goethals siding, which is named after the school DHR serves, was used to place special school trains to and from Siliguri. It still remains part of fond memories of many who studied in Goethal’s Memorial School.

These are not only tangible exhibits of the past, they each tell part of the story of this living heritage. Since its inception in 1881, the Darjeeling Himalayan Railway (DHR) has ferried millions including, viceroys, heads of states, kings, queens and commoners and by doing so it
has laid down memories, traditions and folklore in the heart of both tourists and local residents of Darjeeling. As Earl of Ronaldshay fondly remembers:

“The discovery that here (Siliguri) the meter gauge system ends and the two foot gauge of the Darjeeling-Himalayan railway begins, confirms what all these things hint at. […] One steps into a railway carriage which might easily be mistaken for a toy, and the whimsical idea seizes hold of one that one has accidentally stumbled into Lilliput. With a noisy fuss out of all proportion to its size the engine gives a jerk – and starts. […] No special mechanical device such as a rack is employed – unless, indeed, one can so describe the squat and stolid hill-man who sits perched over the forward buffers of the engine and scatters sand on the rails when the wheels of the engine lose their grip of the metals and race, with the noise of a giant spring running down when the control has been removed. Sometimes we cross our own track after completing the circuit of a cone, at others we zigzag backwards and forwards; but always we climb at a steady gradient.”  

(Earl of Ronaldshay, 1923)

The Legacy of School Trains:

The boarding schools were a tradition the British had established since early days. Situated in the hill stations, the schools were popular among British parents. Special trains were regularly arranged by DHR to cater to the need of the students. It was good business for DHR and used to be a regular feature. DHR advised all station masters to ensure that these school trains were not
detained unnecessarily. It used to be great fun for the children to travel on the ‘The Going Home Day’ Special, a special train from their boarding schools to home. With hundreds of excited school children packed into the carriages, the locomotives hauling the ‘Going Home Day’ specials from Darjeeling would encounter difficulties on the steep climb between Darjeeling and Ghum. Coolie women could make good money carrying the school trunks on their backs up this section, for the added weight was liable to bring the train to a standstill. In 1948, Mount Herman, St. Paul’s, Loreto Convent, St. Joseph’s college of Darjeeling, Victoria School, St. Asper official programme Helen’s Convent, Dow Hills school, Gothals’s Memorial School of Kurseong were among the most prominent to avail school train facilities. (Source: Terry Martin, TheIron Sherpa, Vol-I, Rail Romances Specialist Publishers, UK 2006)

However the Darjeeling Himalayan Railway is more than just dance, drama or music. It’s the life along the DHR, which is why when school children were asked to find a slogan for DHR, a student came up with “I live along the DHR”. It explains all. The DHR lies in the heart of people and survives in their fond memories: DHR still runs the original B class steam locomotives, many of these are century old; the DHR still follows a 100 year old train operating rule which is unique in the Indian Railways; DHR trains run without signals and following the century old tradition, the train is piloted by a points man on foot when it passes through crowded Kurseong town. The Tindharia workshop and its locomotive sheds at Darjeeling, Tindharia, Kurseong and Siliguri maintain century old B class steam locomotives and thus they pass on knowledge, practices and traditional craftsmanship to future generations.

“It’s (Darjeeling Himalayan Railway) so much a part of the mountain scenario that hill residents feel their day is incomplete until it shows up blowing its shrill whistle.” (Hiren Tamang, resident of Darjeeling, BBC News.

From the viewpoint of an anthropologist we can say Darjeeling district is home to immigrants
‘Going Home Day’ was a favorite song with the children leaving Mount Hermon School, Darjeeling.

Going home day has come at last, do-da, do-da,
Going home day has come at last, do-da, do-da, day,
We travel all the night, we travel all the day
We spend our money on the DHR, do-da, do-da, day,
Down from the old Mount Hermon on the small toy train
After nine months of mugging, back to home again
Teachers are so rosy, children are the same
Everyone is happy waiting for the train.
Ghum, Sonada, Kurseong, all are left behind
Though the journey’s very long, I’m sure we do not mind
When we reach Sealdah, bail it with a shout Pan, berri, cigarette, hop the beggars out.

From the viewpoint of an anthropologist we can say Darjeeling district is home to immigrants from Nepal, Sikkim, Tibet, Bhutan and even Europe. In 1835 when the British took over Darjeeling after signing a deed with the Raja (Chogyal) of Sikkim, it was a deserted place full of dense forests and having only handful of tribal inhabitants.

Darjeeling was initially explored for settlement by the British for establishment of sanatorium for the ailing British troops. The European civilians also considered the climatic conditions suitable for their settlement away from the dust and heat of the plains. The vast expanse of tea estates also triggered their interest in the tea-industry.

As they started settling down in the district, many took keen interest in building English medium public schools several of which are now well known educational institutes. The European settlements later went on to attract many International Mountaineering agencies for mountain expeditions as well.

As the British encouraged immigrant workers for the development of the place for cultivation, tea plantations, construction of roads & buildings, the immigrant population started growing rapidly in Darjeeling. In about 10 years between 1839 and 1849, number of immigrants grew
from 100 to 10,000. While immigration to Darjeeling took place from all neighboring places, most came in from Nepal.

Most of the local people are engaged with various sectors of local tourism, travelling industries. Many of them turned their residential house in guesthouse, homestay or as hotel. Some of them are engaged with the food industry to serve the tourists. Even some of the local people also joined the DHR as a Station manager, station masters, and engineer or as working staffs.

The distinction that makes DHR a unique living heritage rather than an interesting industrial relic is the fact that most of the original features are still present and in use. The railway does not operate to entertain visitors, rather visitors come to experience the way it is being operated. DHR does not provide luxury or five star comforts but this subtle difference makes DHR a unique World Heritage Site.

The concluding remarks or the research findings are the most important part portrayed by the researcher. This chapter will help one to analyze the present situation of the Darjeeling Himalayan Railways and as a part of concluding the entire research work some suggestions/recommendations have been proposed.

Limitations:-

The work of my dissertation is both based on Primary sources of data as well as a collection of secondary data record. Conducting primary survey was an extremely enjoyable and interesting experience. However, during the survey I had to face a lot of problems which became a hindrance for finding my results. The first problem, which I faced, was that when I went to survey in Darjeeling, the Darjeeling Himalayan Railways was not entirely in working condition. As in the dangerous landslide which occurred in Darjeeling in the year 2010, had disrupted many of the railway tracks. Yet now, these toy trains have not been able to recover from the distressed condition. As a result, I have been able to work only in the Darjeeling-Kurseong line and the Siliguri-Tindharia line. The other part of the railway route has been portrayed on the basis of people’s perceptions and views. The second problem is the variable climatic conditions. This means that when I visited the field, it was during the winters, with extreme cold climate and gave the desired results. However, during the summers or the spring
and autumn, the scenario is not the same and the results will be different as Darjeeling takes up various styles in different seasons. Therefore, the demand of tourism is different or changeable in different seasons. The third problem was that my choosing of the sample population was not correct or authentic as I selected the population randomly. A stratified sampling is always the best method of choosing the pilot population. But this is a time consuming method and it involves a lot of complexities, however giving the correct results.

The present scenario:-

All the steam locomotives currently in use on the railway are of the "B" Class, a design built by Sharp, Stewart and Company, and later the North British Locomotive Company, between 1889 and 1925. A total of 34 were built, but by 2005 only 12 remained on the railway and in use or under construction. In 2002, No. 787 was rebuilt with oil firing. This was originally installed to work on the same principle as that used on Nilgiri Mountain Railway No.37395. A diesel-powered generator was fitted to operate the oil burner and an electrically-driven feed pump, and a diesel-powered compressor was fitted to power the braking system. Additionally, the locomotive was fitted with a feed water heater. The overall result was a dramatic change in the appearance of the locomotive. However, the trials of the locomotive were disappointing and it never entered regular service. In early 2011, it was in Tindharia Works awaiting reconversion to
In March 2001, No.794 was transferred to the Matheran Hill Railway to allow a "Joy Train" (steam-hauled tourist train) to be operated on that railway. It did not, however, enter service there until May 2002.

The UNESCO Tag has been levied on the Steam hauled engine and not on any other parts. Even if it is unique in today’s world, steam engine is not used anywhere else in India as it has become obsolete in the current situation. As a result, there has been an insufficient or inappropriate calculation of coal and use of water leading to the depletion of the non-renewable resources. Moreover quite often the train ceases to move and stops abruptly in the tracks leading to the irritation of the passengers. At that time diesel is being substituted at the place of coal and the train is again bought into motion. The tourists, who have come to enjoy the joyful steam ride, miss the essence of steam engine at that moment. It is very obvious that a negative impression will be created for the tourists especially for the foreigners who have come from distant places to enjoy the steam ride.

A technological problem is faced by the Darjeeling Himalayan Railways. A machine though mechanical, is ultimately a product of a human innovation and creative genius. The Darjeeling Himalayan railways were made by a very talented and brilliant group of engineers. However in today’s world the level of engineers found lack that intellect and skill. Moreover the technology which is being taught in today’s world cannot match up to that previous level. Hence the engineers graduating in today’s world are handicapped in the technology used in the earlier times. Even the parts, which were used as equipments in the structure of the Railways, are not currently made and hence unavailable nowadays. Therefore, the toy trains which are now designed lack in some technology and also the innovative skills. As a result, the time taken by these trains has also increased to reach the destination and hence there has been a sharp fall in the number of passengers in this train.

As we are heading towards a globalized world, the importance of time and speed is very important in today’s world. People take a ride on these toy trains for just amusement and enjoyment. These cannot be used as regular means of transportation for the local people staying there.

Due to all the above reasons the Darjeeling Himalayan Railways are running at a loss and therefore its share towards the local, regional and national economy is also declining.
at a very rapid pace. Therefore the present scenario of these railways portrays a very negative picture and therefore there is an immediate need to conserve the heritage of India with a worldly importance.

**Suggestions/ Recommendations:**

After studying and analyzing all the figures, facts and the present condition of these tramways, some suggestions or proposals can be given according to my perspective. A detailed description of these recommendations is explained below:

- **Input of foreign technology and engineers:** As the technological problem has been discussed earlier. The suggestions can be proposed in the way that more foreign technology or recent up-to-date technology should be used. Not only that, good quality of engineers should come into the working committee of the workers.

- **Increase in the frequency of ‘Joy Rides’:** Since the rides on these toy trains have become for the purpose of entertainment and amusement, the frequency of these rides should be increased. At present there are only two joy rides which cannot meet the needs of the tourists. If the frequency is increased, an addition to the income generation can be expected fulfilling the demands of the local people.

- **Increase in Work Participation Rate:** The local people are very less involved in the Darjeeling Himalayan Railways. An effort should be made to include the local people for the services of these trains thereby increasing the Work Participation Rate.
Exhibition for Steam Engines: Workshops or exhibitions can be held for increasing the awareness among the people which will mainly include the learning of the mechanism of the steam engines.

Building up of Organizations: Organizations or even committees should be built at three different spatial scales to promote awareness all over the world. The spatial scales will include the building up of committees at local, regional and also national level.

Proper promotion and Advertisement: The Darjeeling Himalayan Railways lacks in the promotion and advertisement. Proper channelization and promotion is required to attract more tourists throughout the world.