

*Representation of the edited Landscape
spirit along Colombo to Badulla
Railway viewing corridor.
(A Journey from Colombo to Badulla by train.)*



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2009

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*This is to Declare
That this Dissertation presented to
the University of Moratuwa
for the Master of Science in Landscape Design has been
composed by me.*

UOM Verified Signature

.....
A.A.R.W. Krishanthi Dias.

*To My
Parents and Teachers.*



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ABSTRACT

This dissertation is about the landscape experience of traveling along the Colombo-Badulla railway corridor in Sri Lanka.

The study is also an elaboration of the daytime experience for travelers, who have special interest to experience the out door landscape of Sri Lanka, with a geographical, geomorphological, climatic and biodiversity interests of the Colombo- Badulla railway corridor.

Chapter one introduces an unidentified viewing corridor which is visible along Colombo to Badulla while traveling by train. It also describes the history of this railway line with its principle land marks, exposing how the secondary landscape elements; (utilities and amenities) located along railway line contribute to symbolize the viewing corridor strengthening the historical character of Sri Lankan railway.

Chapter two describes the geomorphologic characters and the variation of vegetation types available in Colombo- Badulla railway viewing corridor with climatic factors that leads to bring variations of environmental characters in ecosystems which ultimately matters to create variety along Colombo Badulla railway viewing corridor..

Chapter three is an active exposure of the extract of the edited visual landscape spirit of Colombo Badulla viewing corridor which could be experienced as a montage while traveling by train. Lastly this chapter elaborates the variations of spatial qualities of landscape, land use pattern, vegetation and special geomorphologic features which caused to formulate the above said landscape viewing corridor.

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Chapter One

1.0 In search of Colombo/ Badulla Railway line Landscape & introduction of Colombo/ Badulla Railway viewing corridor.

Introduction

“Man spends his leisure time in many ways. One of the most popular forms involves participation in various types of outdoor recreation. Unquestionably the demand for outdoor recreational facilities will increase as an expanding population enjoys more leisure time while becoming more affluent & more mobile”.

By Carlton S. Doren

Land & Leisure pg – 167 in 1979

Entertaining is an important aspect of human life, a part of self discovery, essential for our well-being. Visual entertainment is one such aspect which could be directly absorbed from the surrounding environment by participation.

Experience the surrounding gives when traveling creates visual intellectual perspectives in human mind, which ultimately generate remarkable memories. The natural landscape of Sri Lanka which is world famous is an ideal paradise to experience and entertain leisure. The reason to attract more foreign community here is the availability of lot of aesthetic variations in the landscape with comfortable climatic parameters through out the year. However, consisting almost of a flat terrain around the outer periphery of the island, the topography of Sri Lanka indicates a gentle ascending geographical pattern, creating unique mountain ranges at central hill country.

A linear sample of land area along the Colombo – Badulla railway track is the most suitable example to illustrate this matter. The Geographical corridor along Colombo – Badulla rail track is the best example with a maximum variations of Sri Lankas’ topographical patterns, vegetation and sensible climatic changes at a stretch.

The railway line running across the fresh rural landscape, is an ideal cross section consisting with a lower, middle and hill country peniplains of Sri Lanka to experience the different characters, views and vistas with various changing patterns of topography in this sense. (Fig1.1)

Due to the change of high altitude within short distances Sri Lanka is rich in bio-diversity, creating vast range of fauna and flora in it. The suitable change of climate leads to maximize the capacity of vegetation to create about 300 varieties of tree species.



Colombo to Badulla
Rail Way Stations

Views from Colombo
Badulla Rail way
Line

third pene plain

second pene plain

Birds Eye View of the Typical Viewing Corridor with Pene Plains

Figure 1.1

credit - Ranga

In this sense, the Colombo Badulla landscape viewing corridor is the ideal exposure to experience the panoramic landscape with its climatic variations. Further, this study is also an attempt to analyze the changing patterns of vegetation along Colombo – Badulla railway corridor. That is because the vegetative cover in macro scale in a particular landscape, plays a major role to define the character of environment in rural areas, in addition to topography.

However, this study will examine the landscape experience along Colombo Badulla railway viewing corridor whilst traveling by train.



Figure: 1.2
Typical cross section of the Colombo Badulla railway viewing corridor.
Credit – Ranga.

“Udarata Menike” and “Podi Menike” are the two trains which run up to Badulla from Colombo in the morning. The Night mail train is also available for the convenience of passengers. This study is also an elaboration of the day time experience for travelers, who have special interest to experience the outdoor landscape of Sri Lanka with a geographical, geomorphologic, climatic and bio diversity interest of the Colombo- Badulla railway corridor. This is the most popular rail track which local and foreign communities select to enjoy the scenic beauty in up country and the above said express trains are the only two trains having an “observation salon” in Sri Lankan railway; attached to the last compartment of the train; these saloons are specially designed to observe Sri Lanka’s most fascinating expressions of landscape seated in the “hind sight”.

The major focus of the study is to select the land corridor; which is visible only along Colombo-Badulla railway line.

This viewing zone may narrow down at a time only within ten to fifteen meters and expands some times up to far distance vistas through hills after hills; up to horizon of down south and to the infinite sky over huge mountains.

1.1 History of Colombo Badulla Railway with reference to its principal Landmarks.

Sri Lanka's railway network was established in 1864 by the British to facilitate the transport of goods from up country to Colombo. The first railway line was laid down from Colombo to Kandy. There are 9 lines radiating from Colombo and the most fascinating line out of the nine is the Badulla line which cuts a cross section of the island's geographical and climatic zones. The history of Sri Lanka Railway dates as far back as 5th April 1867 when the first observation run was made from Colombo to Rambukkane carrying several distinguished citizens of Colombo in a train powered by a steam locomotive. Rail track had been laid parallel to highway at Veyangoda and it is a flat land up to Meerigama



Fig. No.1.3
The first railway station erected in Sri Lanka which has now been conserved as the railway museum at Colombo.
Source Ranga Dias.



Fig.1.4
First railway journey from Colombo Railway Station.
Source: Railway Musium.

The first tunnel which is 137 yards long was constructed two miles away from Meerigama railway station at Wilwatta. Ambepussa is the terminal station of the first stage of the railway line, which is 34 ½ miles long and 180 feet above sea level. Whilst moving in the train in this area a fascinating view of Adams Peak which is the most prominent landmark is visible in the eastern horizon, among the range of mountains. Mahaoya is visible in this area parallel to the Railway Line.



FIG.1.7
The landscape near mingalla slope
Credit – Ranga chrishanthi.

At Moragalla there is a long tunnel of 350 yards in which two bends are found. The Lion's mouth situated at Kadugannawa pass is the last ascent in this range of mountains.

The entrance to Kadugannawa is an opening where the Railway Line and the highway are running closely on either sides of the Captain Doston Pillar which has been a landmark in this line erected in memory of an officer who played a main role in the construction of the railway line.



Fig. No.1.8
Captain Doston Pillar.
Source: History of Railway Transport.

At Peradeniya junction, the Iron Bridge over Mahaveli River is very attractive and the botanical garden is also very close by.

The formation of the landscape along this rail track was not merely an engineering task handled by machinery. Many workers lost their lives in forming the line

Until 1872 the train service was inaugurated only up to Kandy with a length of 72 miles, but by 1900 the total length of railway lines in Sri Lanka had been increased up to 297 miles to fulfill the requirements of the planters who urged the government to construct this line. Planting areas up to Bandarawela had been connected with the railway lines.

Work on Kandy, Nawalapitiya line was inaugurated in the year 1874. This portion of track up to Gampola is running almost parallel to the highway and only one bridge was constructed

over the Geli oya. Gampola Railway Station was a little bigger than Peradeniya Railway Station and the appearance was eye catching due to Granite wall Construction.

Nawalapitiya station was erected very close to the river Mahaveli. It is in between a high mountain range and Mahaveli river basin. This Kandy - Nawalapitiya line was opened for the public on 21st Dec 1874. Cutting of Nawalapitiya - Nanuoya railway track was inaugurated on 3rd August 1880 by chopping of the first earth piece by the governor Sir James London. A steel bridge named "Sailam" bridge was constructed little beyond Nawalapitiya Station over the Mahaveli river. The specialty of this bridge is its erection without pillars in the river, by using only a span. There was no such erection in any other place in Sri Lanka at that time and the track was cut in parallel to a branch stream of the Mahaveli among coffee estates.

The distance from Nawalapitiya to Galaboda is 7 miles. Track beyond Nawalapitiya is constructed with steep cuts without tunnels and the track is running past the estates of "Black Pool" and "Wewalwatta" in fascinating scenery of open space. Eye catching views of the Kalani Valley are on the right side of the line and the western horizon is visible on a clear day. This place is the beginning of Hatton Plateau. The Mahaveli river runs through the valley beneath the rail track.

Hatton Railway Station was built at 108 miles which is 4144 feet above sea level surrounded by coffee estates at that time. A little beyond Hatton Railway Station, the longest tunnel No. 14 of 614 yards had to be bored.

Englishmen named this tunnel as "Pool Bank" whilst local people called it as "Dingimale". Boring was carried out by Indian labourers and this was a very strenuous task. Long time separated residential areas have joined together due to the erection of this tunnel.

Nanuoya Railway Station was erected on a fairly large flat land besides a steep hilly area. The height is 5291 feet above sea level and Nuwara Eliya is about 4 ½ miles apart.



Fig. no.1.9
Pattipola Tunnel
Source- History of Railway
Transport.

The construction of the track from Nanuoya to Haputale was also a very difficult task like the Kadugannawa cutting as the ascent was 1 in 44. The "Elgin" fall dropping from the Dambagastlawwa mountain range is close to this railway line and it is a fascinating water course. The valley

below is covered with thick forests and fog.

The transport of goods was the main requirement of the country which led to the inauguration of the rail-way and it handled a large percentage of the goods of the coffee estates at the start, and later the tea plantations. It carried not only the products but also the manure for the estates, labourers, and their consumable goods. By 1895 most of the up country plantation areas were covered by the railway. After the deterioration of the Coffee Plantation, Tea plantation took its place and the railway catered for the tea industry.

The main sources of the government's income was the Railway Department. One fourth of the government's income was derived from the Railway Department. The Tea Industry was fast developed from 1877 to 1900. In 1867 there had been only 10 acres of Tea Land. At the beginning of the 20th century there was no other public mode of transport system except the railway and as such the railway played a great role in passenger transport also.

Maximum height at Pattipola is 6220 feet and two different climatic zones meet at this point. Tunnel No. 18 here is the junction of these two climatic zones at the 140th mile. The Length of the tunnel is 352 yards. When entering the tunnel from Pattipola end it is sometimes drizzling and rainy with fog peculiar to the hill country whilst leaving the tunnel it's often glittering sunshine. In addition to this tunnel, No. 19, 20, & 21 tunnels are found in between Pattipola and Ohiya.



Fig. No.1.10
Pattipola Railway Station
Source- History of Railway
Transport.

In this course of construction the maximum number of tunnels, numbering 13 are found within 4 miles i.e. from 143 to 147 miles between Ohiya and Idalgashinna.



Fig. No.1.11
Idalgashinna geographycal setting.
Source- History of Railway
Transport.

Construction on the Bandarawela – Badulla line was inaugurated in 1913 by the Railway Department. Track up to Ella was laid across vegetable cultivated land. Ella is bordering the Namunukula mountain range. The Southern plain up to Hambantota is clearly visible from Ella Railway Line at some places. Transport from Ella to Demodara was commenced in March 1921. There is a unique construction between Ella and Demodara. That is the nine arch Bridge. These arches have been built with blocks of granite. The Width of the arch is 24 feet 6 inc. Bridge No. 40, 132 yard long is close to this arch bridge.



Fig. No.1.12
Nine arch bridge.
Source: Ranga

The road beyond Demodara is situated on a contour line, 70 feet below Demodara station. Such a deep descent in a railway line will bring immense practical problems. The railway authorities followed a fine strategy to overcome this problem. That is the cutting of the track round the hill in front of the station and digging a tunnel underneath the railway station and reach the land 70 feet below. The tunnel is 232 yards long and numbered as 41. this unique technique of “looping the loop” at Demodara is a master piece of work of brilliant Sri Lankan engineer Mr. D.J. Wimalasurendra



Fig. No:1.13
Demodara Setting.
Source- History of Railway
Transport.

The last portion of the railway track from Demodara to Badulla was opened on 5th February 1924 by Governor Sir Williyam Manning and Hali-ela was the only railway station between Demodara and Badulla.

Tunnel No. 43 is the last tunnel, 166 yards long at 180 miles between Hali-ela and Badulla. All railway stations between Bandarawela and Badulla were very british in characters.

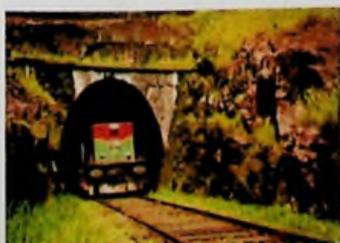


Fig. No.1.14
Tunnel No. 41 at Demodara.
Source- Ranga

1.2 The Secondary Factors which Support Railway Landscape

1.2.1 Administration

Administration of the Railway Department is done by the General Manager in Colombo Head Office, under sub departments known as Way and Works, Buildings, Bridges, Signals and Operating. There are three sub divisions under three transportation superintendents namely Trans Colombo, Trans Nawalapitiya and Trans Anuradhapura.

1.2.1. (I) Railway Bridge Department

All railway bridges are maintained by the Railway Bridge Department under the Administration and Supervision of the Divisional Bridge Engineers.



Figure. 1.15
Recent constructions of railway bridges at Colombo suburbs
Source: Ranga

1.2.1 (II) Railway Lines

Railway lines are defined as Coastline, Mainline, Northern line, Trincomalee line, Puttlam Line and Kelani Valley line. All railway lines are maintained by the Railway Way and Works Department under three divisional engineers assigned to Lower Division, Northern division and Central Division. It is the duty and responsibility of three Divisional Engineers, to maintain the railway tracks in a fittings and strong manner to avoid train derailments and desasters.

1.2.1 (III) Maintenance of railway tracks

It is the duty of the railway Way & Works Sub Department to inspect the tracks regularly & attend to necessary repairs then & there, to avoid train derailments. For this purpose several maintenance employees have been detailed for constant investigation of the track and to attend to the defects instantly. Daily patrolling the line is done on hill country where earth

slips and tumbling /rolling stones are possible. At some places granite retaining walls are erected at steep mountain cuttings to avoid earth – slipping down.



Figure.1.16
Maintenance of railway tracks
Source : Ranga

1.3 Technical Design Aspects and the Supporting Utilities and Amenities related to railway landscape.

1.3.1 Railway Buildings

Almost all the Railway Buildings visible on Colombo- Badulla line are built according to the colonial architectural character. Station master's Bungalows and sub-staff quarters have been built close to stations where possible. Railway Stations & Bungalows are also prominent land marks of long railway lines, specially in rural areas.



Figure.1.17
Watawala railway station
Source : History of Railway transport.

1.3.2 Railway Platforms and Gardens

At present it is the responsibility of the Station Masters to keep the stations, platforms and gardens in a fitting and pleasant manner. Station Masters are encouraged to maintain the stations clean and tidy.



Figure.1.18
Railway landscape- Haputale
Source :Ranga



Fig:1.19
Railway station Haputale.
Source:Ranga.

1.3.3 Railway Signal Systems

The Sri Lanka Railway Signal System plays a significant role in the maintenance of Railway Services. There are three types of Signalling Methods to control trains and engines. That is :-

- a. The semaphore type of signals prevailing from the beginning of railways.
- b. Colour light signals introduced to Sri Lanka a few years back.
- c. Hand signals used by Railway Guards and Pointsmen at stations and railway Yards.

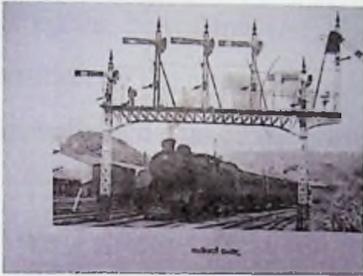


Figure.1.20
A.Semaphore type of signals at Nawalapitiya
Source: History of Railway Transport



Figure: 1.21
B.Semaphore type of signals
Source: Railway museum

Semaphore type of signals have been erected on either sides of Railway stations to start or admit trains, safely without accidents. This type of signals are available only in railway lines and as such they are traditional railway land marks. Colour light signals are provided up to Alawwa to control running of trains. These signals will help to run more than one train in the same direction. Another advantage of the colour light signal system is the possibility of overtaking in a double line section, if necessary and to run trains at different distances on the same line and to admit trains as required by Colour -light Signal Controllers.

1.3.4 Safety devices

The Tablet System available in single line sections is a safety device introduced to prevent admitting more than one train or an engine, at a time and engine drivers are prohibited to pass a starting signal without a tablet handed over to him personally by the station master. It is a thrilling scene to the public to watch handing over and taking over of tablet loops to and from express trains, running fast, and it is a risky experience as well.

1.3.5 Water Columns

Water was a vital necessity for steam locomotives during the past and water columns had been provided at prominent stations to supply water to steam engines and coaches. These water columns appearing as elephant trunks can be seen at Junction Stations even now giving memories of the past.

1.3.6 Turn tables

Turn tables have been provided at terminal stations. like Maradana, Veyangoda , Kadugannawa, Nawalapitiya , Nanuoya and Badulla stations to enable locomotives to turn their position on the return Journey. When the engine is stabled on a turn table it is possible to turn manually and change the position of the engine and the direction.



Figure.1.22
A railway turn table-
Nawalapitiya
Source : Ranga

1.3.7 Signal Cabins

Signals cabins are provided at prominent stations in their yards to control signals and points. The cabin men in these signal cabins manually operate the semaphore signals or Disc signals and do the setting of rail points to various lines on instructions from the Station Master.



Figure.1.23
A signal cabin
Source : Ranga

Chapter Two

2.0 Topographical, geological, environmental and ecological factors which determine the landscape character of Colombo to Badulla railway viewing corridor.

2.1 Geographical and geomorphologic factors which determine the landscape character of Colombo to Badulla railway viewing corridor.

2.1.1 Topography of Sri Lanka and its relevancy to the study

Sri Lanka is a tropical continental island situated in the Indian Ocean between 5°-55' and 9° -50' North latitudes and 79°- 42' & 81°- 52' East longitudes to the south east of the Indian main land. It is pear shape and its maximum length and breadth are 430 Km and 205 Km respectively. The total land area of Sri Lanka is approximately 65610 Km² .

The importance and the relevancy of analysing these principles to the study is to experience the different geometrical formations of the landscape along the Colombo-Badulla railway line.

The viewing corridor along this railway path is an ideal cross section illustrating the the complexity and importance of the variety of the major three peneplains of Sri Lanka.

2.1.2 Peneplains

The surface configuration in Sri Lanka appears to rise in three well marked plains or "peneplains" expressed in the rocky framework of the island from sea level. A peneplain is defined as being almost a plain produced by long periods of weathering and erosion. Hills, ridges and plateaus within them; all the same level are the main characteristics of a peneplain. The rocky frame work of Sri Lanka consist of three geographical peneplains in it's setting.

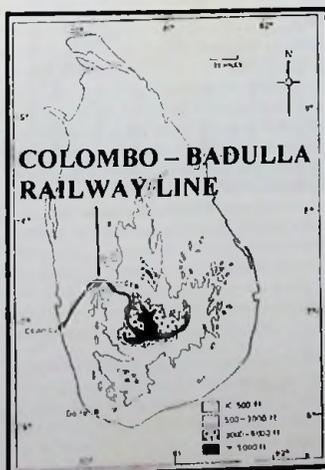
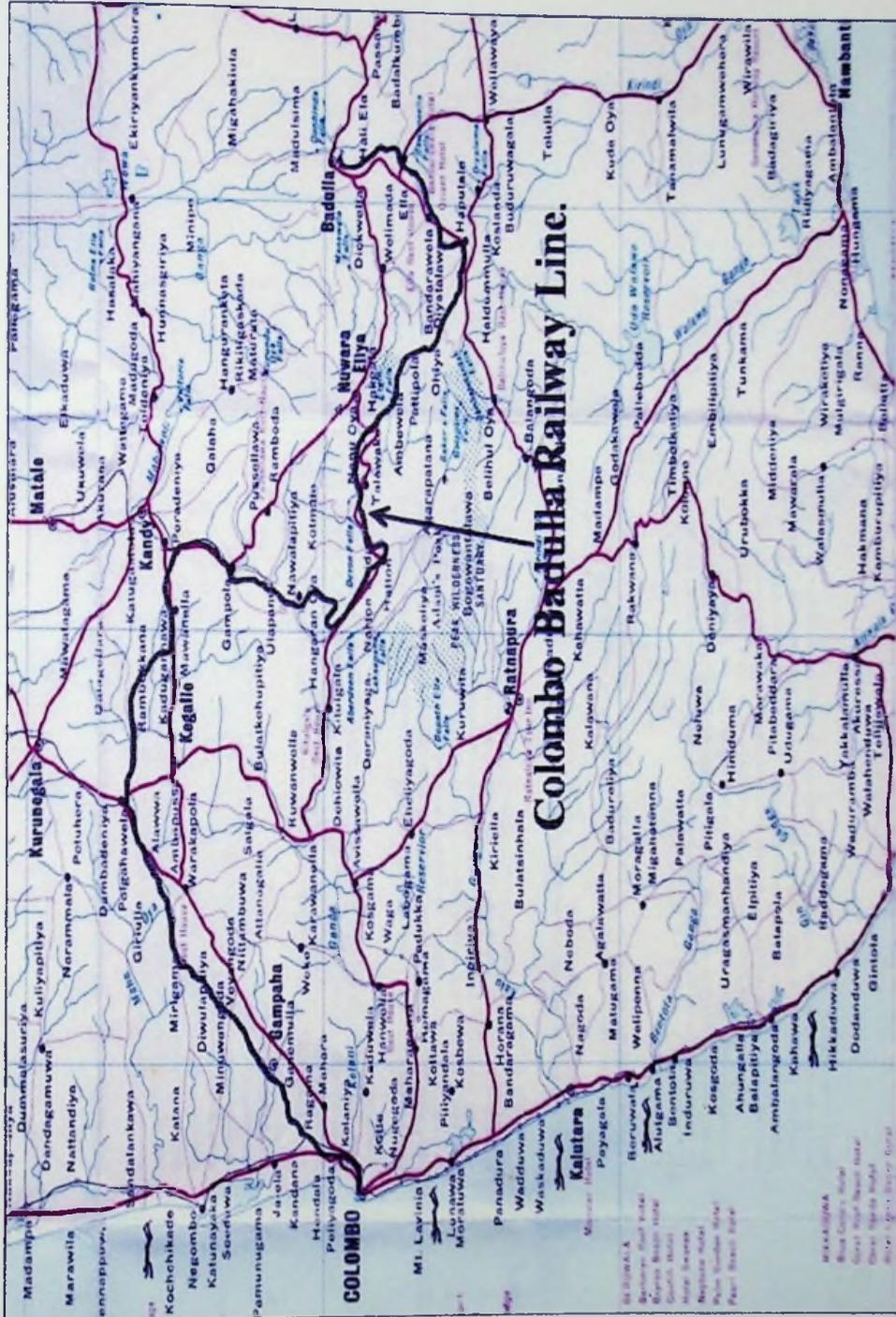


Fig.2.2

Sketch map of the relief of Sri Lanka

Source: Cooray P.G. Geology of Sri Lanka.



Not to Scale.

Map No:1

Source: Sri Lanka Survey Department

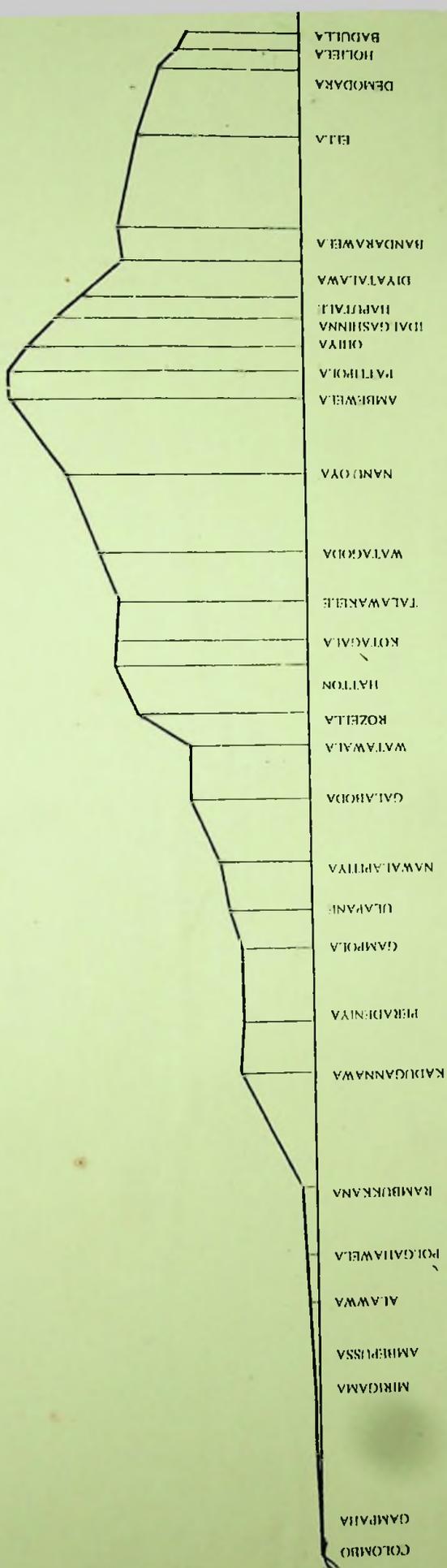


FIG. - ALTITUDE Vs. DISTANCE
(COLOMBO - BADULLA RAIL TRACK)

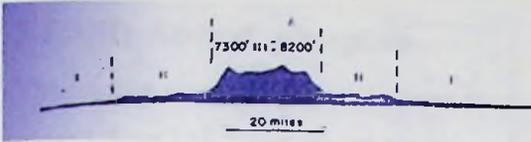


Fig 2.3
 Diagrammatic Section Across Sri Lanka Showing the Three Peneplains
 Source: Wadia D.N-1942

2.1.3.(I) The First Peneplain

The lowest (first) peneplain (Fig 2.3) corresponds to the "lowlands" is a flat; sometimes gently undulating plain stretching down to the coast. It's height difference fluctuate from 0-125m above the sea level. Sometimes there are isolated hill tops (eg. Ritigala) in this peneplain rising up to 100m or more.

The Colombo - Badulla railway track also meet its highest point at Kadugannawa In this penelain



Fig:No 2.4
 Kadugannawa terrain & its Geographical characters
 Source:www.google.com



Fig. 2.5
 Kadugannawa Tunnel
 Source:www.google.com

Kadugannawa area & Balana Pass are the places where the most fascinating geomorphological characters may be seen in the first peneplain.

2.1.3(II) Second peneplain

The middle (second) peneplain rises from the inner edge of the first peneplain as a steep ascend from 125-750m. The ascending journey of the railway from Colombo to hill country meets Rosella station at 1150m from the mean sea level. The landscape becomes more greener and greener towards upcountry with more complicated geological formations in this peneplain. When passing through this peneplain on the Colombo-Badulla railway line a traveller experiences a landscape of great diversity.

2.1.3(III) Third Peneplain

Rising from the inner margin of the middle peneplain, another steep step raises between 750m- 2250m. This is the highest peneplain in the central mountainous region. The major mountains occur in the highest peneplain. They appear in the shape of an anchor with two arms and a central ridge consisting of the Nuwra Eliya and Pidurutalagala mountain ranges. Adams-peak represents the tip of the left arm and the Namunukula range represent the tip of the right arm. The western basin lies between the left and the central ridges and the eastern basin is between the right and the central ridges.

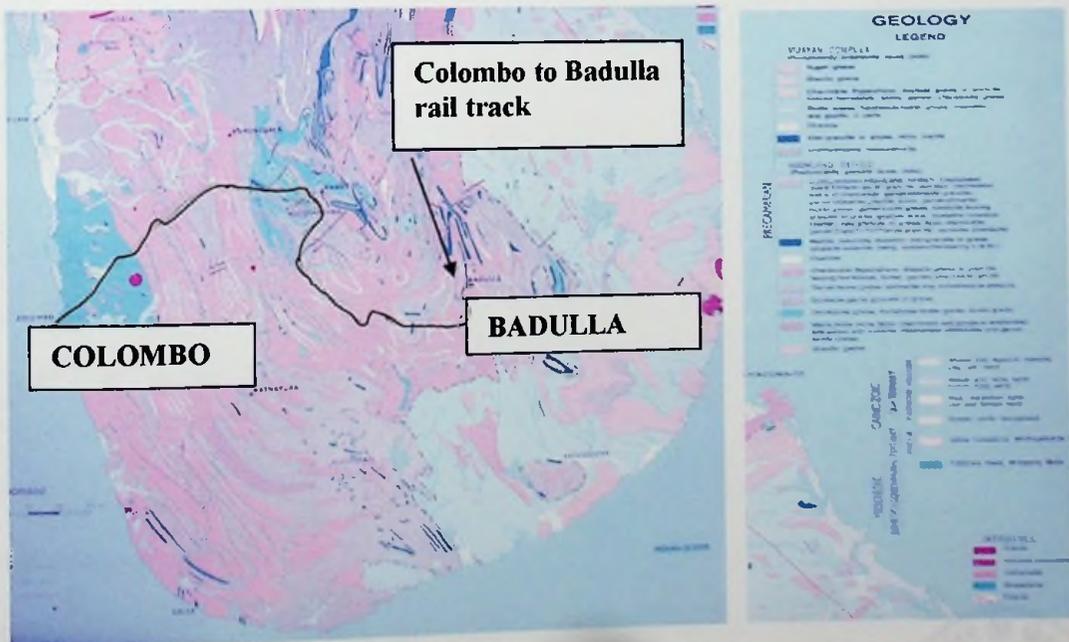


Fig.No.2.6
The diagram showing the relationship of several ridges & plateaus of central hill country.
Source:National Atlas of Sri Lanka.

2.2 Geology of Sri Lanka

The characteristics of soil on the surface of the ground is basically dependent on the nature of the underlying rocks of the Earth. The initial structural rocky frame work of Sri Lanka was formed during Pre Cambrial times 2500 – 1000 million years ago. About 400 million years ago this rocky frame work was only a part of a vast land mass of South America, Africa, India, Australia & Antarctica. Due to various geographical facts which occurred over this long time scale , Sri Lanka has been separated as a small island in the Indian ocean.

The oldest rocks of Sri Lanka that formed during Precambrian period have been sub divided into three main groups, each with its characteristic rock types, structures & well defined distribution.

They are

- The highland series
- The South Western group and
- The Vijayan complex

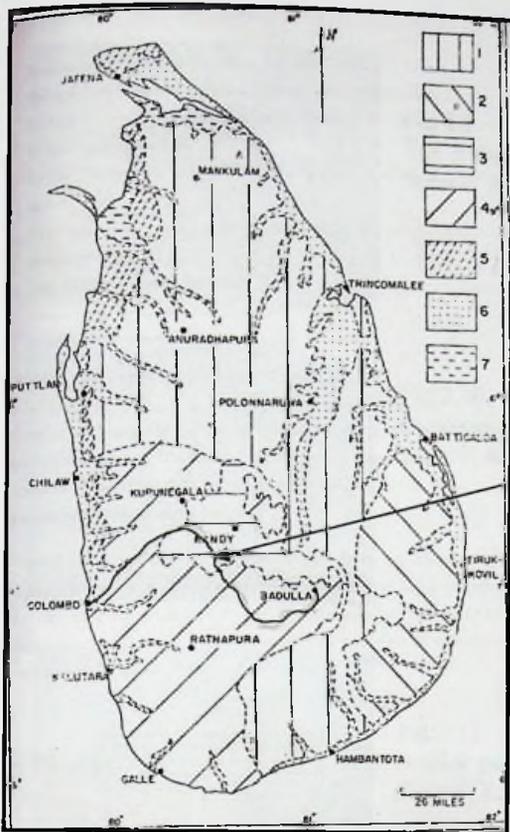


COLOMBO – BADULLA
RAILWAY TRACK

Fig. 2.7
Simplified geological map of Sri Lanka
Source: Cooray P.D. (Geology of Sri Lanka)



2.3 Soils of Sri Lanka



COLOMBO – BADULLA
RAILWAY TRACK

Fig:2.8
Simplified Map of the Soil Groups of Sri Lanka
Source: Cooray P.G, Geology of Sri Lanka.

Sri Lanka has 14 great soil groups according to Moorman & Panabokke. Some of these are unique to the island. e.g. reddish brown earths. Others are widespread through out the tropical region. Boundaries of the major great soil groups of Sri Lanka follow closely the main climatic divisions in the island.

The importance & the relevancy of analyzing these rock & soil formations to the study is to clarify the landscape formation of rocks, soil & vegetation. The Colombo – Badulla railway line passes through two major above said rock formations. These are the south western group & highland group respectively. The soil formation, geographical characters & the difference of vegetation and the quality of ground water have clear differences due to this geographical formation and the height from mean sea level. Furthermore, the Colombo - Badulla rail path runs crossing directly the rural areas of the main towns while the Colombo - Badulla main road is running across more urbanized areas. So, this rail path expose more clear, pure & fresh elevation of natural rocks, geological formations, natural fauna & flora, & water bodies along the "railway path".

2.4 Different expressions on the texture of Sri Lankan Railway's rocky surfaces.



Fig 2.9
The embankments created by rocks gives a cosy effect.
Source: Ranga



Fig 2.10
Darkness created by a rocky tunnel
Source: Ranga

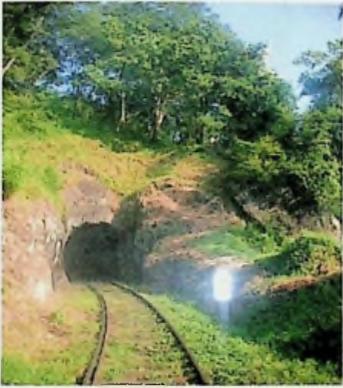


Fig:2.11
A mini pocket created by Sri Lankan railway.
Source: Ranga

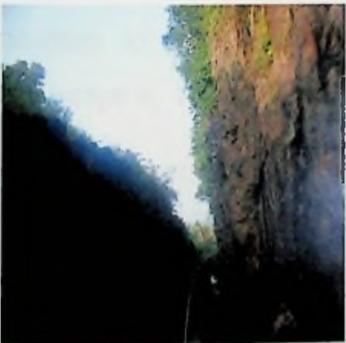


fig.2.12
Various rock types and exposed soil formations along Colombo- Badulla rail track adds variety of texture, colour and formation of landscape elements.
Source: Ranga

Colombo- Badulla rail track is the one with the greatest number of tunnels along this journey. Almost all these tunnels have been located in the “highland group” region. The exposed cross sections of these huge rocks by human intervention create various kinds of rhythms and textures bringing variety to the Sri Lankan landscape as remarkable landmarks.

Out of these the Kadugannawa Pass Fig 2.13 , the Mingala Pass Fig 2.14 , the narrow rocky corridor after passing the longest tunnel “Dingimale”, Hatton are very Special in their formations.



Fig.No: 2.13
Kadugannawa Pass
Source: History of railway transport



Fig: 2.14
Mingala Pass.
Source: History of railway transport

2.5 The important geomopological features along first second and third peniplanes along Colombo – Badulla rail track.

Figure 2.15 is the map of Major fold structure in the Kandy area and the Railway track follows it's ascending path from Colombo to Badulla rising & falling within it's gentle structure to allow observers to experience the surroundings to appreciate fascinating Landscape & to participate in the Landscape while seated in the train.

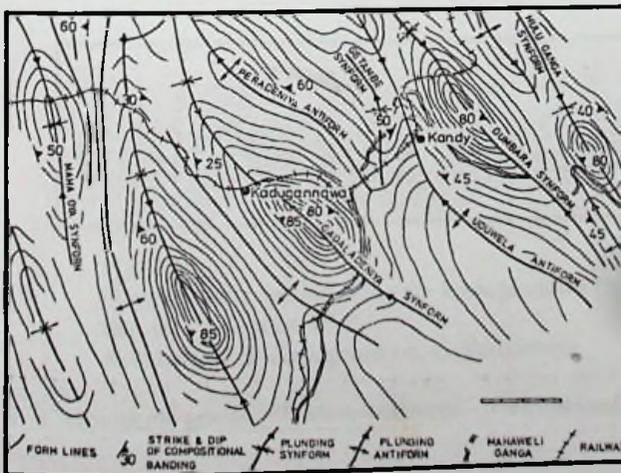


Fig. 2.15
Map of major fold structures in the Kandy area.
Source: Berger and Jayasinghe. 1979.

The Kandy District is situated in the 2nd pene plane and it is an area where the distinct rock types of Sri Lanka are mostly found. The rail track passes through these unique rock types at Kadugannawa, Hatton and Nawalapitiya.

The common geomorphological features to be seen in Sri Lanka are ridges, valleys, escarpments, slopes (gentle slopes / steep slopes) plateaus, plains etc. The most important and distinctive features of this landscape at Kadugannawa are the arenas located around the rail track.

Rock layering can be seen in most of the rocks which brings variety. Most of the rocks found in Sri Lanka are metamorphic rocks and therefore folded layering is a possible feature. The possible rock types present on the way from Colombo to Kandy are :- charnockitic gneisses, metasediments, Hornblende biotite gneisses and granites.

“Black, lustrous amphibolites (or hornblende – plagioclase schists) and dark coloured biotite – and hornblende – biotite gneisses occur in the Kadugannawa area as a large lens – like body, about 8 -10 miles wide and stretching from north to south for about 30 miles. They are well exposed along the Kadugannawa pass (Fig.2.16), and because they were so distinctive, they were named the ‘Kadugannawa Gneisses’ (5). It is now known, however, that similar rocks occur in many places in the Kandy District, especially near Nawalapitiya

.These hornblende – biotite schists and gneisses seem to occur in synformal basins, or ‘arenas’ to have steeply dipping foliation planes, and to have undergone considerable deformation and migmatization. They are all composed of hornblende, biotite, and plagioclase, together with a little pyroxene. Within these gneisses are narrow calciphyres, which suggests that they may be metamorphosed impure calcareous rocks of a special character. They may, on the other hand, be igneous rocks such as basaltic lavas or volcanic ash which have been converted into hornblende – biotite schists and gneisses by high – grade metamorphism.”

*Professor Cooray in 1938
(Geology of Sri Lanka)*

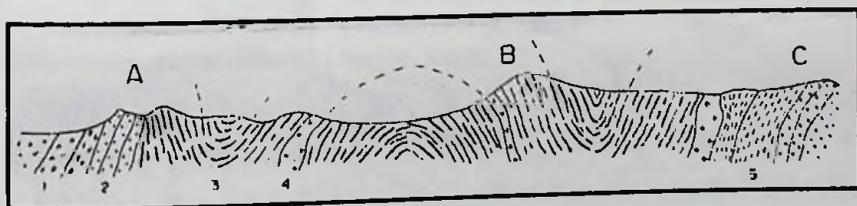


Fig: 2.16
Diagrammatic section along the Kadugannawa Pass.
Source: J.S. Coates. 1935
A-Pelapatha. B-Kadugannawa. C- Peradeniya.

1. Charnockitic gneiss 2. Metasediments 3. Hornblende-biotite gneiss 4. Pink granite 5. biotite

2.5.1 Meta Sediments

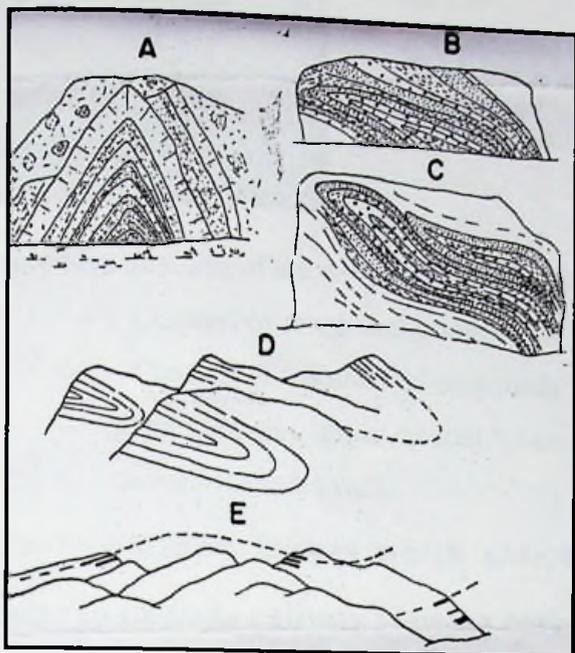


Fig. 2.17
Types of folds in the central highlands.

- A. Symmetrical fold in quartzites and quartz schists, Nayanza Estate, Maskeliya (height of 7 2/1 feet)
 - B. Small recumbent fold in metasediments, Bindunuwewa Farm road, Bandarawela (Length of 40feet.)
- Source: J.S. Coates. 1935

Meta sediments may be investigated as semi elibsic characters in Sri Lankan Geomorphology.

The Diagram illustrates small recumbent folds in matasediments found in the Bindunuwawa farm road, (length of 40ft) between Bandarawela and Ella.



Fig. 2.18
The difference of texture and colour of the exposed metamorphosed rock formations of Sri Lanka.
Source: Ranga

Fig 2.18 is an example found at Southerland Estate – Ella which is about 3935 ft above mean sea level. There are very rare situations where the touch of a landscape architect could be expressively and creatively applied to enhance the natural landscape in man made architectural features, merging with the natural vegetation. There should be many locations in the Colombo – Badulla Railway reservation which could be exposed as elegant & creative additions with a little more consideration.



Fig. 2.19

The elegant and creative work of art at the entrance to the Kandalama Hotel; by architect Jefery Bawa

Source: Ranga .

The expressive qualities of the entrance

- Contrast of rough and smooth
- Contrast of natural and man made

(The exclusive space created by an organic rocky frame work and a vertical cement rendered wall)

2.2 Environmental factors which determine the landscape character of Colombo to Badulla railway viewing corridor.

2.2.1 Seasonality of Sri Lanka and the effect of relative humidity according to geographical setting

“Unlike conditions in mid-latitudes of the globe the seasons of Sri Lanka bring almost unnoticeable temperature fluctuations. Therefore, Seasonality primarily results from variations in the rainfall rhythm” :Sri Lankan’s climatic year is thus divided in to five climatic seasons”

(Prof. Peeris, Plant Communities of Sri Lanka”)

2.2.1 (a) The conventional convergence period (March to mid April)

In this season a constant daily weather sequence is occurring. In the early after-noon of the day convectional activity happens which is induced by the bright colour mornings, This induces the formation of rain clouds by early after-noon and thunderstorms in late after-noon.

2.2.1 (b) The pre monsoonal period (mid April to late May).

Transitional weather patterns are noticeable during this period. The conventional weather is gradually suppressed by surges of the South-west monsoon. .

2.2.1 (c) The south - west monsoon period (late May to late September)

This brings the largest amount of rainfall to the South Western lowlands.

Some places of windward slopes of the central highlands receive over 5000 millimetres of rain annually. The south-western monsoon blows across the north central and south eastern lowlands as a dry, desiccating wind.

This is the season when the variations of most of the flowering trees of the wet zone low land are visible. Most of the prominent flowering trees bloom to their maximum flowering capacity and the crowns of trees are covered with flowers. The landscape architectural quality and the aesthetic sense are most sharply expressed when these trees are planted as clusters, or in rows along avenues using a monoculture.

These illustrations show an opportunity where such planting could be used in landscape projects in tropical wet low lands in Sri Lanka.



Fig: 2.20
An avenue of Val Ehela
Source: Ranga

2.2.1 (d) The convective cyclonic period (late September to late November)

This period appears with the weakening of the south west monsoon. Unlike the convective weather in March _ April, this period can include cyclones. When combined with convective weather , cyclones occasionally produce periods of heavy rainfall causing widespread floods and landslides.

The north-east monsoon period (November-to February) contains a weak and dry wind compared with that of the south west monsoon.

2.2.3 Climatic zonation of Sri Lanka.

Climatic zonation of Sri Lanka has been based on the total annual rainfall and its monthly distribution of the seasonality of rainfall.

Major climatic zones of Sri Lanka are wet and dry zones. In addition an intermediate zone has been identified between wet and dry zones. Two other zones have also been identified at extreme North –West and South East areas as arid zones.

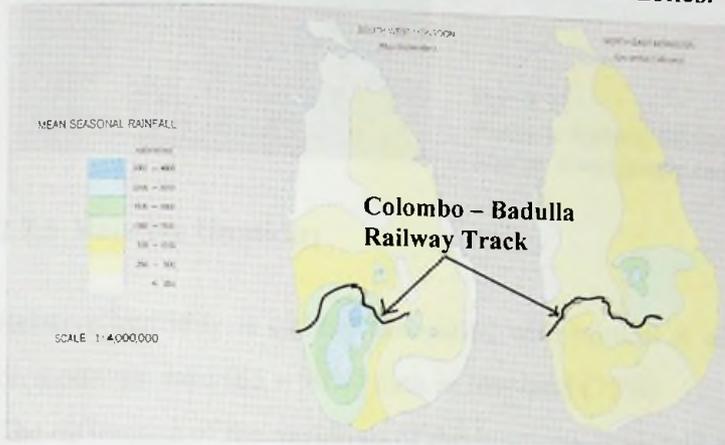


Fig : 2.21
Mean Seasonal Rain Fall.
Source: The national atlas of Sri Lanka Survey department.

The conventional wet zone receives both south-west and north-east monsoonal rains. (High rainfall over 1900 mm). In the dry zone, much of the annual rainfall is provided by the North East monsoon. The South West monsoonal clouds drop much of its rain on the leeward side of the central highlands. Therefore winds reaching the leeward lowland dry zone contain very little moisture. (Kachchan wind) (The total of the rainfall vary from 1270 mm to 1900 mm).

2.2.4 Temperature .

Sri Lanka is a small island surrounded by the Indian Ocean. So oceanic influence plays a major role in governing the temperature.

The mean air temperature of Sri Lanka ranges between 20 – 30 C °. The mean temperature decreases with increasing altitude. There is a lapse of 0.2 C ° for an increase of 30m in altitude. In the south-central highlands, the mean temperature is around 20 C ° and annual and seasonal variations are noticeable.

When comparing with the other countries of the world Sri Lanka shows clear differences of climatic changes within a small distance. This is due to the difference of the altitude within a short distance

The Colombo – Badulla railway journey meets this sensitive climatic variation having the cool sense of the misty and gloomy spirit reaching its climax at Pattipola railway station.

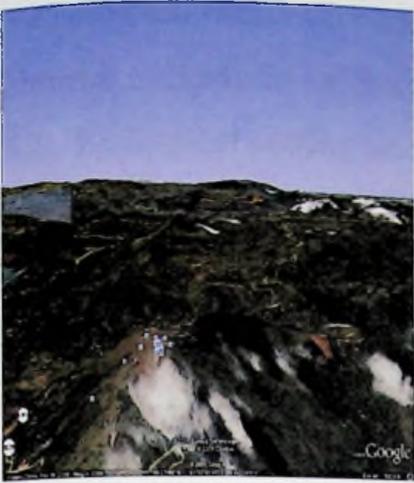


Fig : 2.22
 Pattipola Railway Station with the cool misty spirit
 Source: www.google.com

2.2.5 Relative Humidity

Relative humidity is closely associated with rainfall & air temperature. Humidity is higher on mountain tops (85 – 90%) than in low land (75%)

The difference of the variation of the humidity is clearly noticeable at higher elevations like Pattipola, Ohiya, Idalgashinna and Haputhale when travelling on the descending rail track over saturated humid environment which reflects its overloaded water vapour as mist, a romantic experience while moving here and there towards the fast blowing winds over mountain ridges.

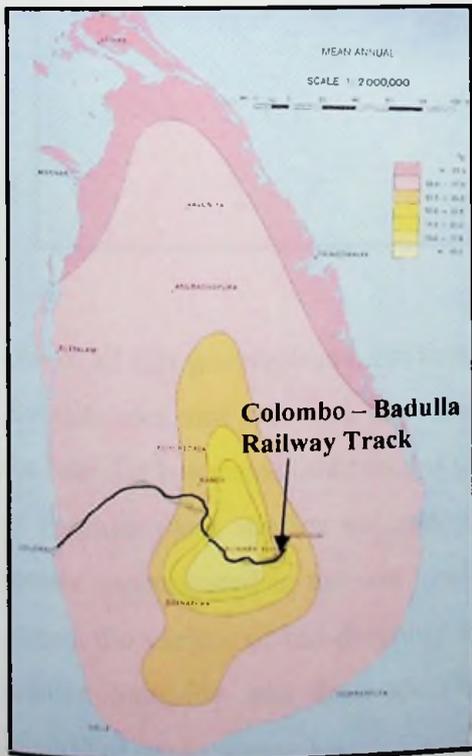


Fig. 2.23
 A Diagram showing
 Mean Annual Rainfall of Sri Lanka
 Source: The national atlas of Sri Lanka Survey department.

2.3 Ecological factors which determine the landscape character of Colombo to Badulla railway viewing corridor.

2.3.1 Ecological setting and plant communities of Sri Lanka.

Due to its unique setting as an island of Indian ocean; Sri Lanka is blessed by many geographical patterns and different kinds of soil formations in this climatic zones. Variations of annual rainfall which blows from south-east and north-west directions also matters for the changes of climate'.

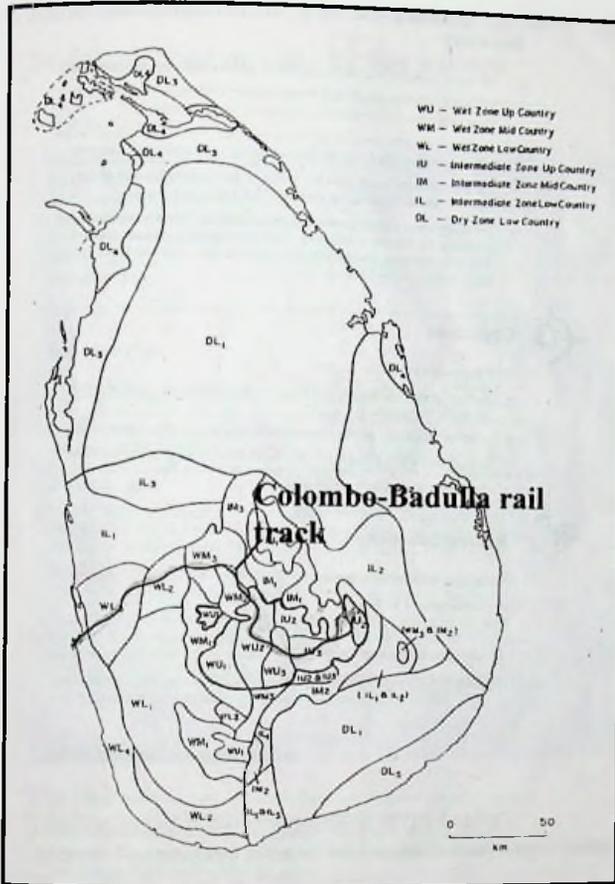


Fig. 2.24

Agro ecological regions of Sri Lanka

Source- Plant Communities of Sri Lanka

Due to all this geographical, environmental and climatic factors, Sri Lanka has a greater bio diversity per unit area than any other country in Asia. Considering the limited land area of the Island it is a remarkable record to have about 3950 species of vascular plants, about 30% of vascular plant species are endemic to the country. The bio-diversity and endemism is mostly concentrated in the wet lowlands and central mountains. Apart from the above said factors the variety of bio-diversity is also increasing with the height from mean sea level, relative humidity and the specific locality. (whether it is the coastal, intermediate inland/hill country area.)

This difference of biodiversity leads to have many varieties of vegetation in species, scale, colour, character and texture in their form and to break monotony and to have so many green landscape through-out the Colombo-Badulla rail-way journey. The importance of analysing all these geographical Environmental and climatic variations in the previous Chapters are to understand the effect of these factors on variety of vegetation. Colombo – Badulla railway track is an ideal cross section, which runs through various Climatic zones and covers maximum number of Ecological zones of Sri Lanka by making one journey. Observation of the environment is very effective as one can experience all these differences of the climate, vegetation and many geographical variations in the landscape point of View by this journey.

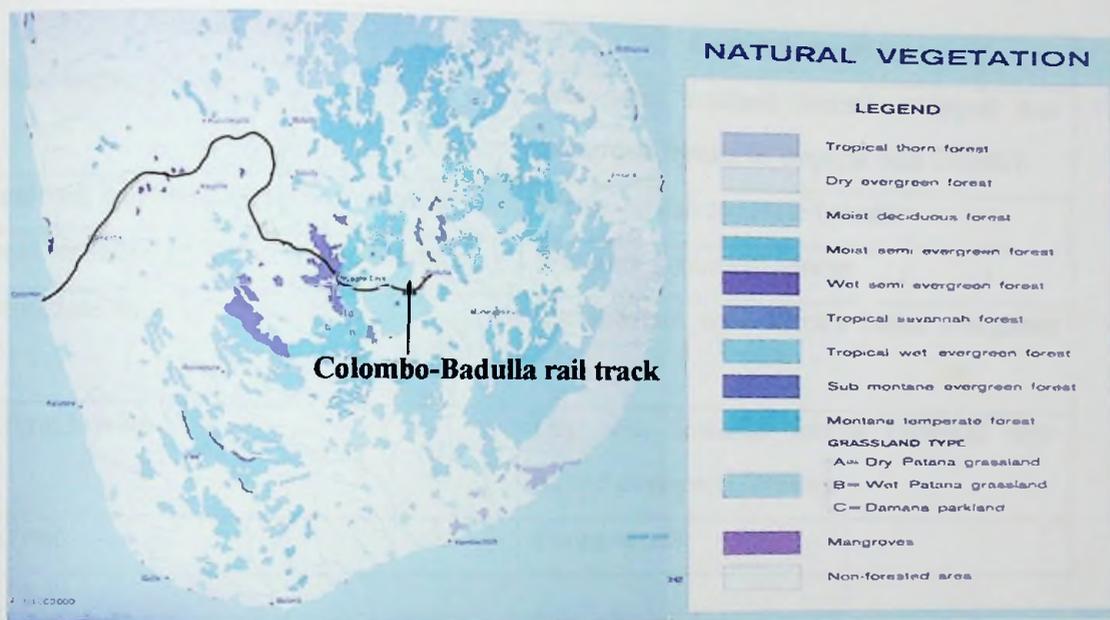


Fig : 2.25

Distribution of Natural vegetation of Sri Lanka

Source: The national atlas of Sri Lanka Survey department.

Prof. Pemadasa in 2001 writes;

'It is common to find sharp changes in habitat conditions within short distances in a climatic zone. In the south west region, in particular, as one moves from place to place, there are changes in elevation (and hence temperature) rainfall, soil, drainage and topography. These differences result in the occurrence of different associations of species in the same natural forest.'

The vegetation types of Sri lanka are;

Forests, Fresh water communities, marine and maritime vegetations are the vegetation types of Sri Lanka. Out of these, forests are the predominant vegetation.

2.3.2 Natural forest types in different climatic zones of Sri Lanka.

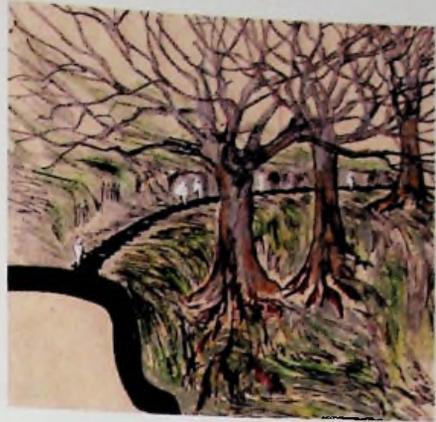


Fig: 2.26
Profile of Upland wet zone along Colombo/Badulla Railway Line
Source: Chrisanthi.

Climatic zone	Forest formation
Lowland wetland zone	Wet zone lowland forests (tropical wet evergreen forests or tropical rain forests).
Upland wet zone (900 – 1650 m altitude).	Wet zone sub montane forests.
Upland wet zone (above 1650 m altitude).	Wet zone mountain forests.
Intermediate zone	Intermediate zone forests (semi evergreen forests).
Dry zone lowlands	Dry zone lowland forests (tropical dry-mixed evergreen forests).
Arid zone	Thorn scrubs

Table No.:01

Table showing the main types of forest according to climate in Sri Lanka

Source – Plant communities of Sri Lanka

Three of the climatic zones listed in table are passing through the Colombo-Badulla railway journey as the Wet zone low lands, the wet zone sub montane forests and the wet zone montane forests respectively. These three zones include most of the species of Sri Lanka. Further more the railway corridor directly exposes the fresh, pure natural and man made forest cover which is rarely urbanized. One cannot experience this much exposure by travelling along the Colombo- Badulla main road.

2.3.2. (a) Forests of the wet low lands.

(Tropical rain forests / Tropical wet ever green forests.)

Tropical rain forests are the natural vegetation of the south western low lands below 900m altitude, that is the ^{first} part of the Colombo-Badulla railway which extends some 75 kilometres as far as Colombo to Kadugannawa.

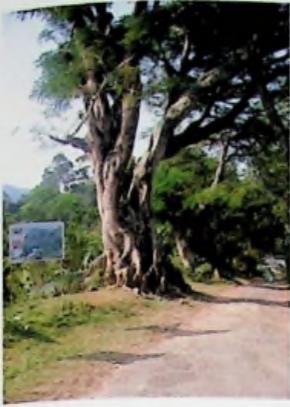
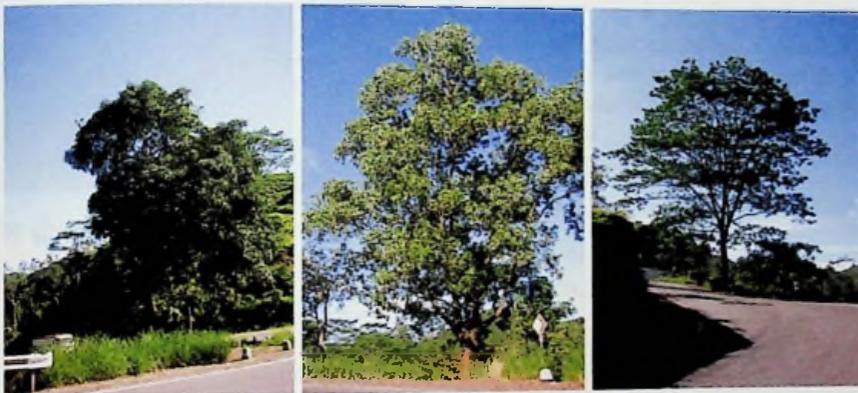


Fig. 2.27
Mara tree (*Dilomix regiya*) at Ella railway station with fluted trunk
Source: Ranga

Many of the trees of this zone have fluted trunks. These flutes radiate from the base like exposed large roots known as buttresses. (These roots have been modified to function as additional roots to provide supplementary anchorage.) Mostly common in the members of the families dipterocarpaceae and leguminosae.



a – *Chearocarpus* Sp. b – *Vitex pinata* (Milla) c – *Capnosperma* Sp.

Fig 2.28
Different characters of trees in wet lowlands – Along Colombo / Badulla main Road.
Source Ranga

The barks of the trees typically smooth with a characteristic colour. The tall trees are branched only at the top & have straight “boles”.
The leaves typically have drip tips to drain excessive rain water. In most trees, flowers & fruits originate from the main trunk. This is called canliflory

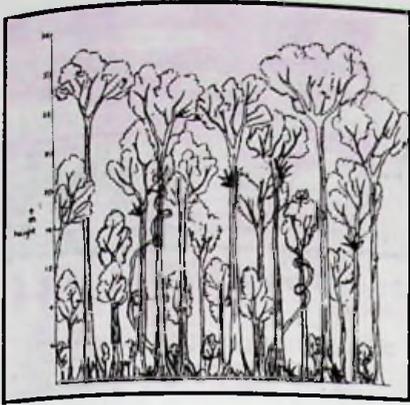


Fig. 2.29
Profile of tropical rain forest
Source- Plant Communities of Sri Lanka

The trees of Wet zone lowlands, Wet zone sub montane & wet zone montane forests are arranged in five distinct layers. The topmost emergent layer contains a scatter of tallest trees, which grow more than 45m, typically species of *Mesua*, *Shorea*, and *Dipterocarpus*. Trees of 20-30m height occur in the continuous canopy & sub canopy layers typically, *Dillenia* spp, *Cullenia* spp. *Artocarpus* spp. & *Mangifera* spp.



Fig: 2.30
The rich and thick canopies of naturally grown wet zone montane forests which are surviving several tree species together along Colombo / Badulla Main Road - Ginigathena
Source: Ranga

The third layer consists of shrubs & tree lets.

The lowermost layer is composed of grasses, herbs & lower plants like bryophytes & Pteridophytes.



Fig: 2.31
Chearocarpus Sp.
Along Colombo /Badulla Main Road
Source: Ranga.

The 4 main tree communities available in lowland wet zone forests of Sri Lanka are *Dipterocarpus* consociation, *Mesua – Shorea* association, The *camptosperma* location, The *vitex – Wormia – (cheatocarpus – Anisophyllea* association.
Physiognomically these areas are distinct because the trees are medium sized trees.



Fig. – 2.32
 Profile of a wet zone Montane Forest
 Source – plant communities in Sri Lanka

2.3.2. (b) Forest on the central hills

The forests located within the altitude 900 m – 1650m are called wet sub montane forests. The natural forests occurring above 1650m altitude in this region differ from the forests in the 900 – 1650m altitudinal range.

2.3.2. (c) Wet zone montane forests

These forests are found in Nuwara Eliya, Sita Eliya, Hakgala & in Knuckles range.



Fig : 2.33
 Dwarf trees with twisted and gnarled branches
 Source: Ranga

Dwarf trees with twisted & gnarled branches are the dominant character of the trees in these forests. The strong winds blowing on this region contribute the dwarf & twisted character. The vertical layering (stratification) is limited to two or three layers. The barks of these trees are rigid.

The dominant tree species are *Michelia*, *Sygygium*, *Eugenia*, *Rhododendron zeylanicum*.



Fig: 2.34
 The Colombo-Badulla railway at Sanctuary of Thangamale showing the distinctive colonisation of the precipitous manmade cliff above the railway line with species of *Rhododendron*.
 Credit: Ranga.

Idalgashinna, Pattipola and Abewela are the areas where grasslands and wet pathana are available.

Rhododendron is a twisted hardy dwarf plant, in Sri Lanka's wet montane forest which has fleshy "plastic" like leaves with a glistening reflective effect on its leaves. These plants are so hardy even to grow on huge rocky ridges of wet pathana areas. Hence Rhododendron is a distinctive plant of the railway landscape one not seen before. They are exposed to the train passengers as it creeps through dangerous and adventurous higher landscape elevations which are normally not accessible by the public. The open areas are inhabited by almost pure populations of strobilanthus spp. Soils in these forests are rich in humus.

Wet zone sub montane forests are found on the western bank of the central hills. Soils of this zone are poor in nutrients due to erosion of sloppy sites.

This forest is distinct from the lowland forests because of the absence of tall trees. Poor soil conditions & strong winds available in these zones must be the reason for the above said factor. The dominant trees of these forests are Doona spp, Sygygium spp, Calophyllum spp.

Lianas & epiphytes are very common, but treelets are rare in these forests.

2.3.2. (d) Grasslands

The type of grasslands found in different climatic regions of Sri Lanka varies from one another.

The three main types of grasslands are

1. Montane (Patana) grasslands – in higher elevations
2. Savanna grasslands – on the eastern slopes of central hills
3. Grasslands in wet & dry lowlands – Villu, Damana, Talawa

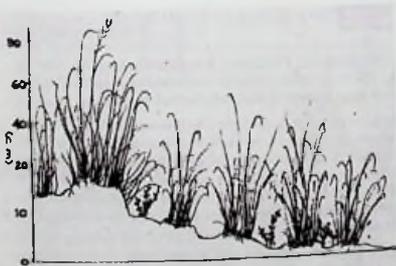


Fig. 2.35
Profile of Wet Pathana grasslands
Sauce – Plant communities of Sri Lanka

The Following types of grasslands can be identified along the Colombo- Badulla railway line. The Lower Wet Patana occur in the cool upland wet zone in the 2000-2330m altitudinal range. An extensive patch is found at Ambewela.

The cattle grazed short turf of the lower wet patana is co-dominated by *Arundinella villosa* and *Chrysopogon zeylanicus*. Because of heavy grazing *Chrysopogon* cannot grow as luxuriantly.



Fig : 2.36
Intermediate Patana - Ohiya, Haputale
Source: www.slendemic.com

Intermediate patanas are altitudinally and vegetationally intermediate between wet and dry patanas. They occur at 1500-2000m altitudinal range on steep slopes in Ohiya and Haputale. The medium sized grass cover (about 1m height) is mainly of *Arundinella villosa*, *Chrysopogon nardus*. The common associates include *Andropogon lividus*, *Chrysopogon acciculatus* and *Themeda tremuda*. It's clear that intermediate patanas contain a mixture of species found in the wet and dry patanas.

The summer dry zone dry patanas are confined to the Uva Basin in the cool upland dry zone. The grass cover is short and dominated by creeping perennial grasses such as *Alloteropsis*, *Brachiaria*, *Chrysopogon acciculatus*, *Digitaria* and *Eragrostiella*

The short turf is a result of heavy grazing. *Cymbopogon nardus* and *Themedia tremula* occur only in places where grazing and human impacts are low.

Chapter Three

Chapter Three

3.0 Case Study - Landscape viewing corridor along Colombo – Badulla railway line.

(Landscape character, land use Pattern, and variations of environmental characters.)
 This case study will examine and describe the special qualities and variety of landscape including bio diversity, vegetation, geographical and climatic variations with landmarks facing North-East and the Central part of hill country, a long Colombo to Badulla railway line..

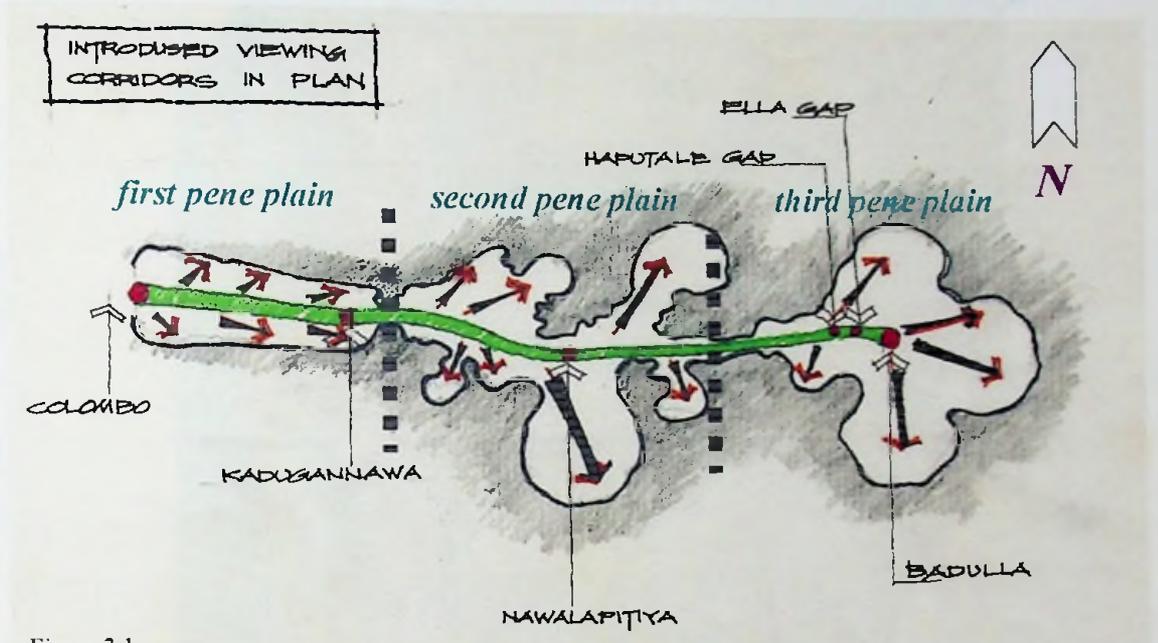


Figure:3.1
 Typical Plan of the Introduced Viewing Corridor
 (Credit: Ranga Dias)

Finally this chapter does not record the sequence of the journey respectively but is an attempt to absorb the edited spirit of spatial qualities of the Colombo Badulla rail track in Sri Lanka's landscape.

3.1 Physical characters of the first Peneplane (Land use vegetation topography and land marks.)

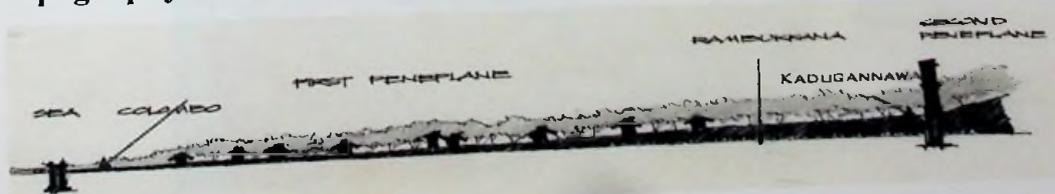


Figure: 3.2
 Diagram Showing the Typical Topography of the First Pene Plane
 Credit: Ranga Dias

**Landscape Viewing corridor
Colombo to Veyangoda.**



Not to Scale.
Map No: 2
Source: UDA.

3.1.2 Colombo – Kadugannawa. (First Peneplane)

Altitude and climate:-

The first peneplain is between Colombo and Kadugannawa railway stations (up to height of 520m from mean sea level), which is almost a flat terrain. Temperature difference is not great, being between about 28 °C and 30°C. This is predominantly a hot humid climate which is fairly comfortable. A very bright sunlight may be experienced in most of the days of the year. Monsoon rain is experienced especially between May and September in the year.

The Physical character

If one starts the journey from Colombo fort railway station the surrounding townships are very congested. Visual of railway yard at Dematagoda & the haphazard buildings around the area are common features upto Ragama. The visual boundary is commonly demarcated by a close congestion of buildings (Fig.3.3-A and 3.3- B)

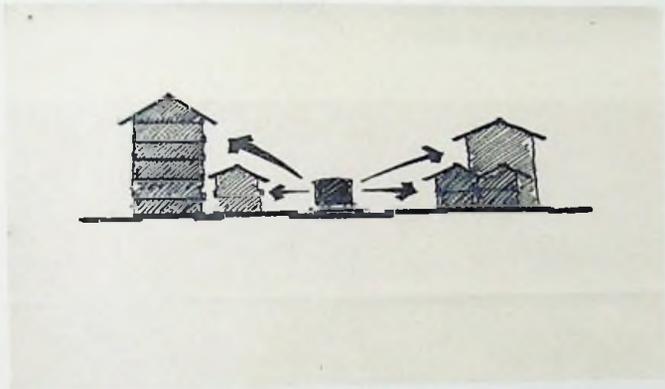


Figure: 3.3-A
Diagram section showing
restricted views along the rail
corridor upto Ragama
(Credit:Ranga Dias)



Figure: 3.3- B
Congested areas of Colombo
Source:Ranga Dias



Figure: 3.3 - C
Electrical lines are disturbing the
natural character at Veyangoda
Source:Ranga Dias

Consisted with individual and scatted building items or solid strips attached to each other and surrounding is almost a flat terrain. Topography of this zone indicates a very slite ascend which is hardly noticeable, with in the first peneplane. The landscape character expands to natural & manmade cultivations towards the end of the first peneplane and gradual variations of topography here and there may be seen in suburban towns. Towards the first peneplane, except natural vegetation this zone elastrate a little increment of introduced cultivations; coconut, rubber, paddy, banana, etc. Congested character of human settlements are fairly reduced and environmental pollution is not much harmful as Colombo suburbs.

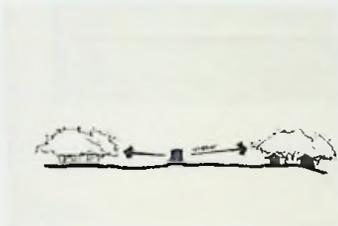


Figure:3.4-A
Showing the spaciousness around the flat terrain and less density of human settlements
(Credit: Ranga Dias)



Figure: 3.4-B
The topography is spacious. The terrain on the other side of the rail track is mostly covered with wetland marshes, man made paddy cultivations and huge trees of fleshy foliage.
Credit:Ranga Dias



A- Replanting Paddy



B- bare land prepared for sowing



C. Paddy fields with crops.



D- Plowing paddyfields.

Figure: 3.5

Paddy fields reflecting different expressions due to their state of maturity of the crop at Veyangoda
Source: Ranga Dias.

This is also a changing experience whilst moving in train besides paddy lands. In different seasons of the year, the activities and appearance varies in different areas. At one spot when ploughing and preparation of the ground is going on, sowing seeds or replanting is done in another place. Some times the farmers use two wheel tractors or plough with the help of a couple of cattle whilst some farmers till with mammoties. When green patches of young plants are visible at one field, golden brown crop is dancing to the tune of breeze in some other fields. During the dry season harvesting and threshing is observed and after that bare land is visible until the next season starts.

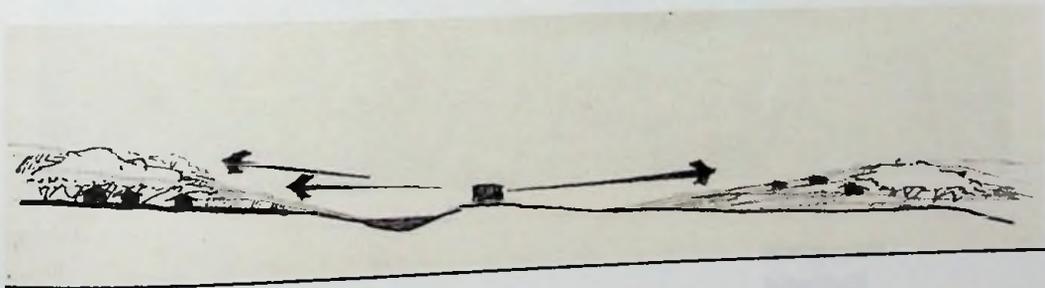


Figure: 3.6-A

The Intermidiat Zone of the first peneplanc.
Credit: Ranga Dias.

**Landscape viewing corridor,
Balana to Peradeniya.**



Not to scale
Map No:3

The geographical corridor look spacious and clear, views and vistas along the eye level are available one and half km besides the railway corridor. Natural vegetation is consisted of tropical lowland forests (refer fig:3.6-A and B) and the landscapes look fresh, healthy & fleshy through –out the year, hence the observers traveling by train do not disturb much to entertain the natural and manmade landscape of these tropical lowland areas.

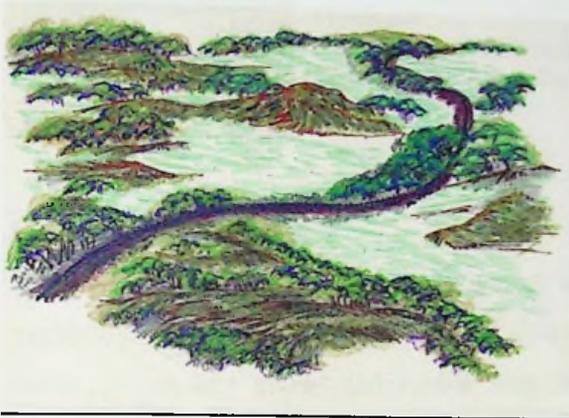


Figure: 3.6-B
Birds eye view of the Intermediate zone located in the first peep plane.
Credit: Ranga Dias.

The availability of wetland marshes are a prominent character **which** sustain natural vegetation and increase the retention and flood detention capacity ~~when~~ during the time of natural disasters. This is the prominent intermediate zone of Sri Lanka which is consisted with maximum number of wetland marshes, and contains a large capacity of biodiversity in wetland mangroves and high degree capacity of aquatic animal species.

The first part of the journey extending to Colombo to Kadugannawa is about 104 kilometers in length and climbs approximately 516 meters from mean sea level.

Unlike the main road the rail track generally runs through plantations. Mainly the coconut plantations and paddy fields are visible rather than towns.

This zone consists of intermediate landscapes which have several mountain tops here and there and the bottom half of most of the hills have been seriously damaged by human intervention. This is due to urbanization and almost all the landscape in the vicinity has been utilized by recent building constructions.

Other Land Marks

At Polgahawela, Alagalla Rock (1 to 2 km beyond Meerigama) is a prominent landmark. Suddenly a tunnel appears (12.5m); the first of 43 tunnels erected along the Colombo-Badulla railway track.



Figure: 3.7
The first tunnel which meets while travelling from Colombo to Badulla.
Source: Ranga Dias.

Climate and Vegetation

This zone has hot humid characteristics and the normal air temperature is about 28 °C. vegetation is almost the same as the Colombo lowland areas. Few plantations of monocultures like paddy and rubber may be seen at some intervals except natural vegetation. At some places along the railway line, the landscape has been step down as terraced paddy fields to follow the contour lines of the terrain.



Figure: 3.8
Terrest paddy fields.
(A common feature which define the hill country man-made landscape Character along rail way line.)
Source: Ranga Dias.

The appearances of paddy and rubber plantations also vary according to seasonal changes reflecting various expressions to the travelers in different months in the year.

From February to March almost all the leaves of the rubber plantations are fallen down. Fruits (the fallen buds) could be seen spread over the ground cover; Remaining stems of the trees jutting out of the earth creating rigid vertical elements in rows towards the railway track. This sight is very particular at the hindsight in the observation saloon of the train. "Rubber" is one of the few plants one can experience in such a rigid geometric vertical effect which is available in Sri Lanka.

Up to Polgahawela areas the train has finished its first phase of the journey of twelve hours comfortably. Now the Passengers have a little break or rest their eyes for a while before reaching the forthcoming fascinating areas.



Fig:3.9

Two tunnels located close by gives identity to the surrounding landscape (location -within the first peneplane)

Credit: Ranga Dias.

Before reaching the end of first peneplane the train maximise its speed due to the stability of the rail track, as it is going through almost a flat terrain. The next fascinating view point; the first unique landscape stretch when reaching hill country by train is now about to reach the "Balana" Pass.



Figure: 3.10

Balana Pass

Source:Ranga Dias.

Balana pass which is at an altitude of 1500 ft, is a special vista which consists of several mountain tops with various shapes. Ridges & valleys together forming in a fascinating landscape reflects dark green patches with tea states. Another vertical texture is created by far distance mountain tops with "Casuarina" cultivations. Among these, the next hill top creates huge patches of grass (mana) which is special to hill country. Variation of the texture, colour and the height difference of vegetation is very attractive. This landscape itself is a remarkable landmark when reaching Colombo to hill country.



Figure: 3.11
 Illustration of the effect of texture, colour & height of vegetation which adds variety & identity to the landscape
 Source: www.google.com

When reaching Kadugannawa the speed of the train is gradually slowing down to walking pace due to the steepness of the incline. Elevation figures are marked at stations giving the correct altitude. Each station is higher than the other, the height of Kadugannawa being 520 meters.

After passing Kadugannawa at a height of 516 meters, the railway corridor along Peradeniya & Gampola areas are a bit congested, specially the land use around Gampola railway station.

3.2 Physical Character of second Pene plane (Kadugannawa to Rossalla.)

3.2.1 Land use – Peradeniya



Figure:3.12
 Kadugannawa Railway Station
 Source: www.google.com

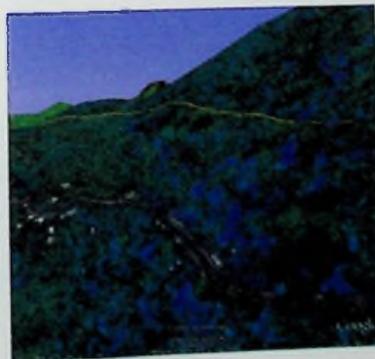


Figure: 3.13
 Relationship of Kadugannawa Main Road and the rail track above.
 Source. www.google.com

Considering the land use pattern of peradeniya it is a matter of sustainability that manmade elements should compromise with the natural landscape, with in a developing era. However, this is a location where the rigid geometrical man-made buildings have acquired more than enough space for their dominance.

The balance of the elements; natural to artificial Solids vs. voids are So far, so good

However it's up to the government & local authorities not more to expand these manmade developments for the sake of natural landscape spirit of Peradeniya.

3.2.2 Land use – Gampola-Gelioya

Traveling further to the hill country in the first peneplane , Gampola & Gelioya are very congested townships around the railway stations.

The geographical terrain has rapidly and densely covered by recent developments. This is a pleasant situation where the Gampola town has come up with its recent urbanization for a fairly saturated point, balancing the natural vegetation & water bodies intimately merging with manmade constructions and infrastructure facilities.

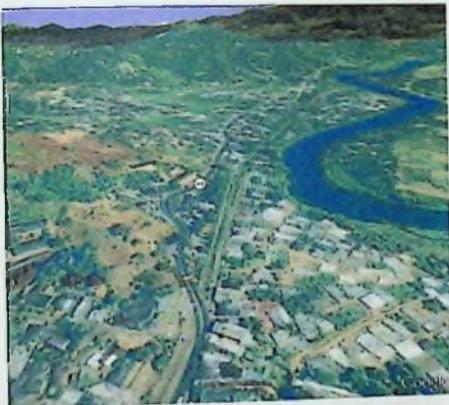


Figure: 3.14
Congested areas of Gampola
Source:www.google.com

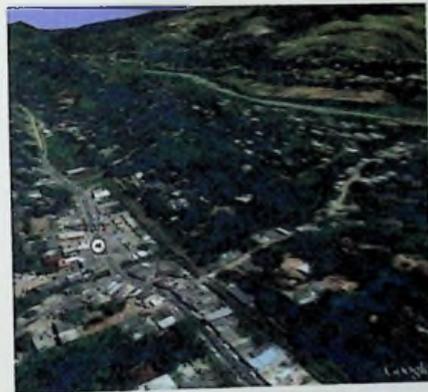


Figure: 3.15
Congested areas of Gelioya railway corridor
around the station
Source:www.google.com

Hence it is the very essential requirement of the local authorities & the government not to exceed the limitations of physical development to maintain the township in a sustainable manner, to avoid environmental pollution and to maintain the landscape spirit of Gampola and Gelioya towns at their optimum conditions.

3.2.3 Land use – Ulapane and Watagoda.

The Landscape corridor around ullapane to watagoda consists of a well balanced land use pattern with the natural landscape located in the 2nd peneplane.

Natural character of wet zone and sub montane forests and the man made tea estates consisting to the most extent of landscape pattern. Visuals of the rail corridor as a whole, still has a certain balance of natural & manmade elements & infrastructure facilities.



Figure:3.16-A
Viewing Corridor around Nawalapitiya Railway station with congested buildings.
Source: www.google.com

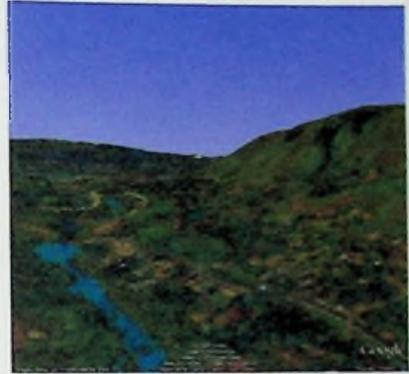


Figure: 3.16-B
Railway Station-Ulapane with the predominant land mark Mahaoya
Source: www.google.com

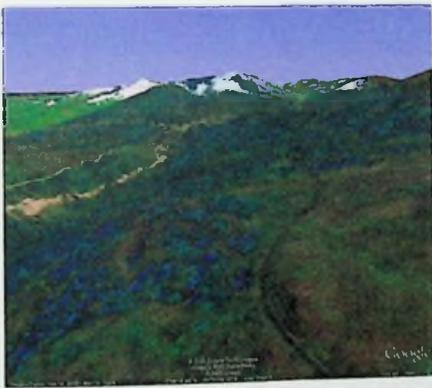


Figure: 3.16-C
Vegetation and Topography of Ulapane with cool misty environment.
Source:www.google.com



Figure: 3.16-D
Gloomy space created around railway track due to the thick forest coverage.
Source:www.google.com

Figure: 3.16 Differentiations of the compassion of congested towns and calm thick forest coverage within the same region bring verity to landscape.

3.2.4 Landscape viewing corridor around Galagoda Railway Station.

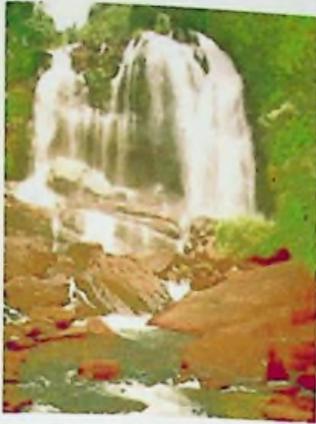


Figure: 3.17 Galaboda Waterfall.
Source: Ranga



Figure: 3.18 Galaboda Railway station.
Source: Ranga

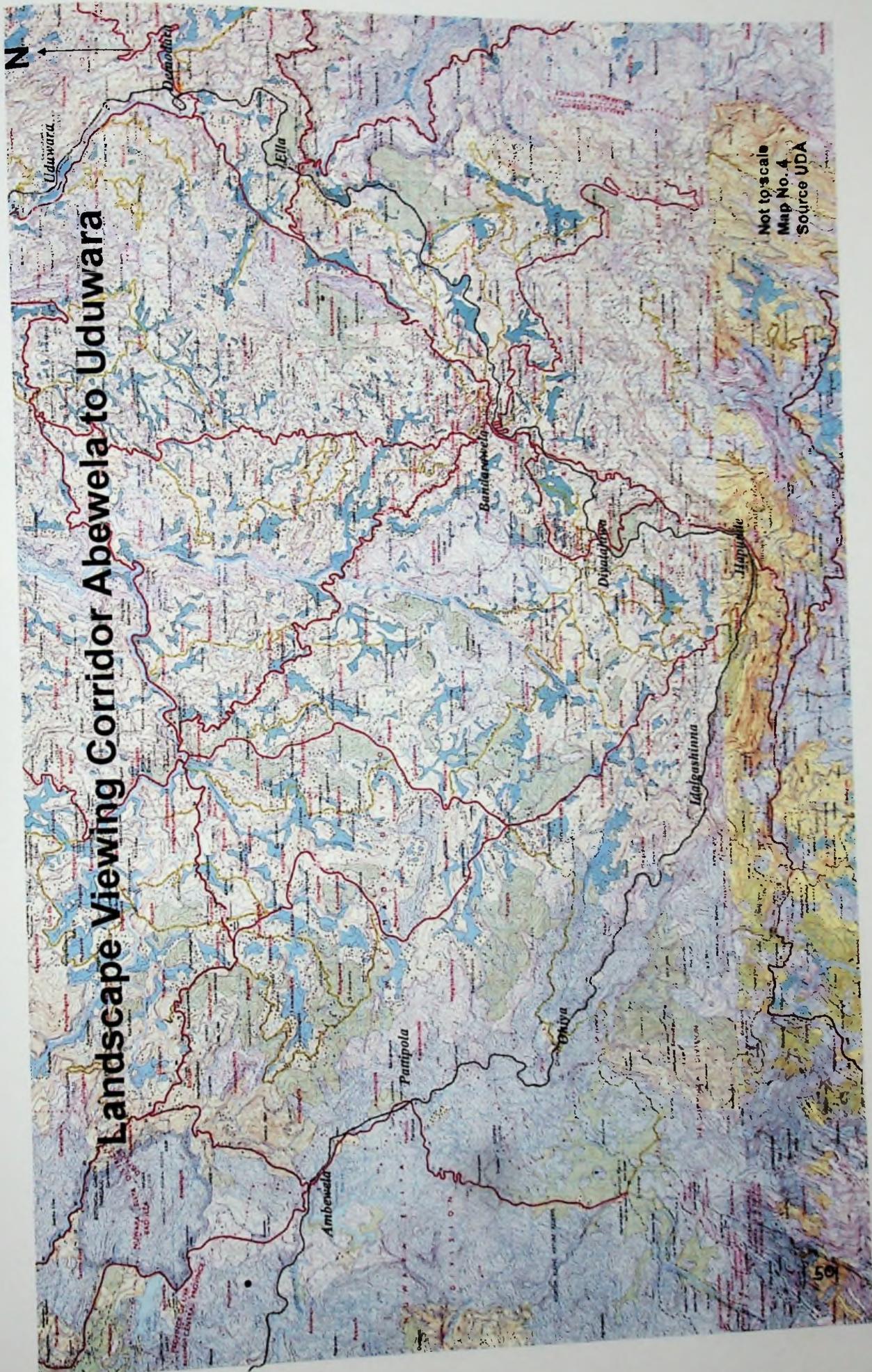
The next most fascinating feature on the train journey is the Galaboda water fall, which is met immediately after passing Galaboda railway station. This is the only prominent water fall in the whole journey.

Horton plains and other preserved forests make the origin of this. From this water fall, wet & cold air is dropping creating water streams to rocky bottoms located hundreds of feet below from the top of the water fall. Unfortunately according to the location the water fall is situated, the train passes immediately after the sudden visual of water fall, not allowing the observers to entertain the visual spirit of its landscape.

By the time of arriving these areas from Colombo, one has pass panoramic views of second peneplane.

Hatton and kottagala areas, are the elevations where the travelers may take another break, as the landscape viewing corridor is obstructed by congested buildings. Observers can have a half-hour tea interval until the train starts to journey on its next phase at the 3rd penplane; the highest elevation of Sri Lanka.

Landscape Viewing Corridor Abewela to Uduwara



Not to scale
Map No. 4
Source UDA

3.3 Physical character of Third Paneplane.

3.3.1 Thalawakale to Ambewella.



Figure: 3.19
Viewing corridor around Thalawakale.
Source: www.google.com



Figure: 3.20
The Railway loop created in the landscape
Watagoda.
Source: www.google.com

Before reaching its climax from Talawakalle to Ambewella a distance of Nine Kilometers train has to ascend a steep slope up to Ambewella. (Figure 3.19) Talawakale to Bandarawella is the zone where planted forest types are found in variations, in addition to tea plantations.

Further more this is the zone where one experiences the cool mists of this highest elevation. After passing Talawakelle at a height of 378 meters there are miles and miles in train journey creating various characters with natural and pure manmade tropical montane rainforests.

3.3.1. (I) Experiencing the spatial progression of hill country landscape.



Figure: 3.21
Forthcoming landscape
of Casuarina plantations
at Ambewella Station
Source: Ranga.



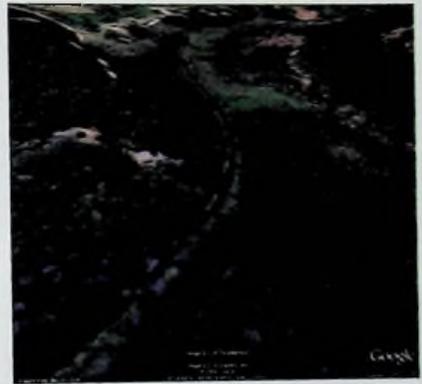
Figure:3.22
The thick man made Casuarina forest
Coverage on either sides of the rail
track
Source: www.google.com

After passing Rozella Railway station the train has to ascend a steep slope and pass several stations to reach the highest point of the journey: Pattipola. At this zone the moving experience by train is somewhat different. When the train seeks through planted forests of third peneplane. That is the montage of feelings which generate by the spatial progression of this hill country landscape, while the train runs through few man made forests.



Figure:3.23-A
View is limited according to the Topography of terrain.
Credit: Ranga.

Figure:3.23-B
A man made landscape zone where the character of vegetative cover is sharply simplified.
Source: www.google.com



At the start the train passes a semi open area with man made forest: a huge blue plantation of casuarinas trees on one side and a gentle slope on the other side. The surrounding is a bit spacious but no any human settlements and constructions available except rail path. Hence the character of vegetative cover is sharply simplified and the observers are being contemplated in a calm mood(fig 3.23.-A section No, 3)



Figure:3.24-A
Train seeking in to the forest; surrounding is fairly bright.
Source: Ranga.

Lightly saturated mist enhances and stimulates the cool, cosy effect in the forest. But still people enjoy the surrounding visuals being standing on the foot board of the train



Figure:3.24-B
The train seeking into the environment become darker and
Source: Ranga.

While proceeding further train meets a gloomy and restricted earth basin between two mountains covered with huge trees planted on the steep slope of the embankments, (section four)

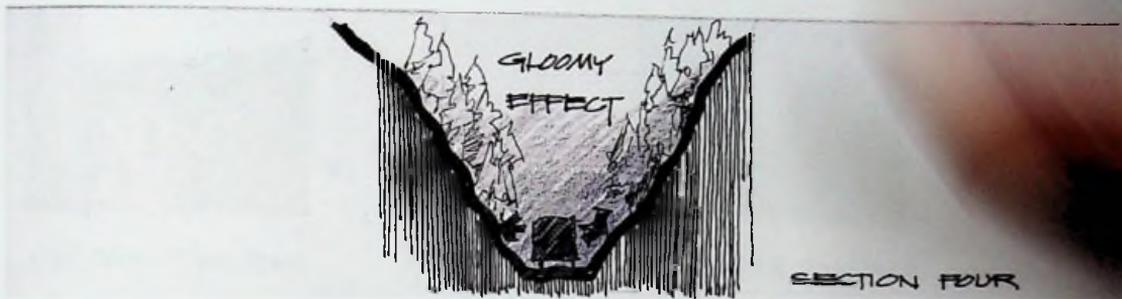


Figure:3.25-A
The gloomy and restricted earth basin of topography.
Credit: Ranga.

The space around the train is demarcated and isolated with a strong rock cut, The dark shades of huge trees enhances the inscrutable quality of surrounding , The climate is cool and saturated with a light mist creating a semi transparency in the air, While the train is proceeding through this environment (section 4) observers can experience a peculiar effect as if they are being sunken in the jungle.



3.26-A

Figure:3.26- – The transition area.

The next forthcoming visual montage of this drama is a transition area between the gloomy blackish blue Casuarina forest cover which is the glimpse of huge Eucalyptus plantation on either sides of the rail track. The terrain is almost flat and a symbol of a bright open space could visualize with the bright blue sky and clear air.

Source: Ranga.



3.26-B

Lightly saturated mist enhances and stimulates the cool, cosy effect in the forest. But still people enjoy the surrounding visuals being standing on the foot board of the train



Figure:3.24-B
The train seeking into the gloomy forest and the environment become darker and darker.
Source: Ranga.

While proceeding further train meets a gloomy and restricted earth basin between two mountains covered with huge trees planted on the steep slope of the embankments, (section four)



Figure:3.25-A
The gloomy and restricted earth basin of topography.
Credit: Ranga.

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3.26-A

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Source: Ranga.



3.26-B



Fig:3.25-B
Variation of topography from gloomy restricted earth basin.
Credit: Ranga.

At the next moment it could be observed the train leaving the hilly terrain and moving towards a bright open space.



Fig:3.26-A – Open Space



Fig:3.26-B- Open Space

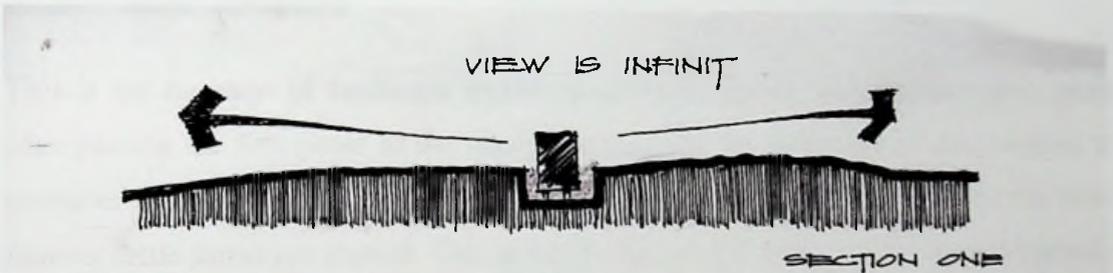


Figure:3.26-C
Fig:3.26 The train leaving the hilly terrain and reaching to open spaces where the view is infinite.
Credit: Ranga

By this time the train has gradually passed the steep ascend of the third peneplane, and has reached the flat open spaces at Ambewela, The view is infinite now and the character of vegetation pattern has totally being changed and observers are exposed to a completely different mood. In this area, the landscape is totally covered with large patches of vegetable crops which the scale of plantations have being minimized to their last possible visual scale.



Figure: 3.27 A,B,C- Large patches of vegetable Crops with a bright environment.
Source: Ranga.

Sun light of this area is very bright and environment look cheerful with the presence of human settlements and with the variety of fauna and flora. By this moment the train has come to it's destination of the montage of this landscaped zone, intimately merging with the life of Sri Lankan rural hill country settlements.



Figure:3.28
Bright open spaces at Ambewela.
Source: Ranga.

This is the montage of landscape spatial progression starting from gloomy hilly areas after passing the first phase of the third peneplane and the difference of environment al character of bright flat terrain is the areas of Pattipola and Ambewela where the most famous cattle farms are located. This is due to the natural setting of montane grasslands which reminds the travelers the scenic beauty of Australian, Newzealnd countries.

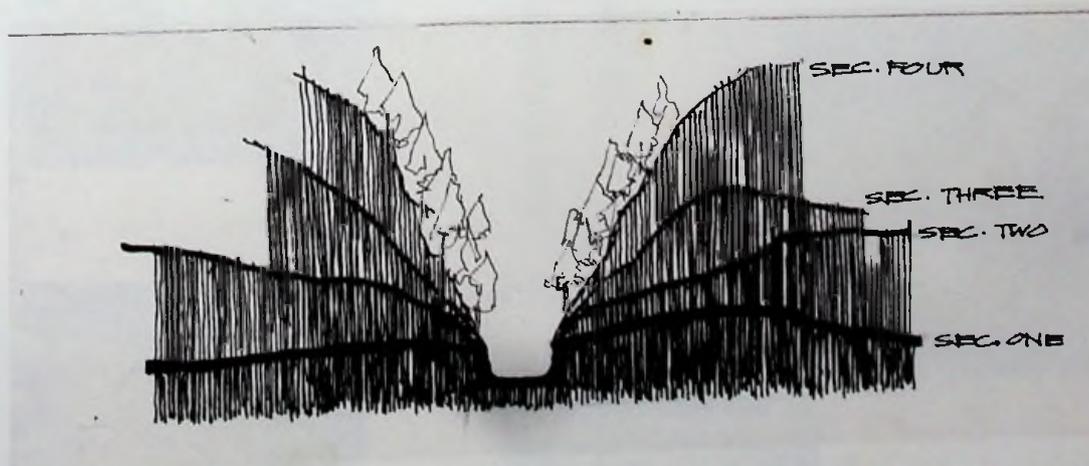
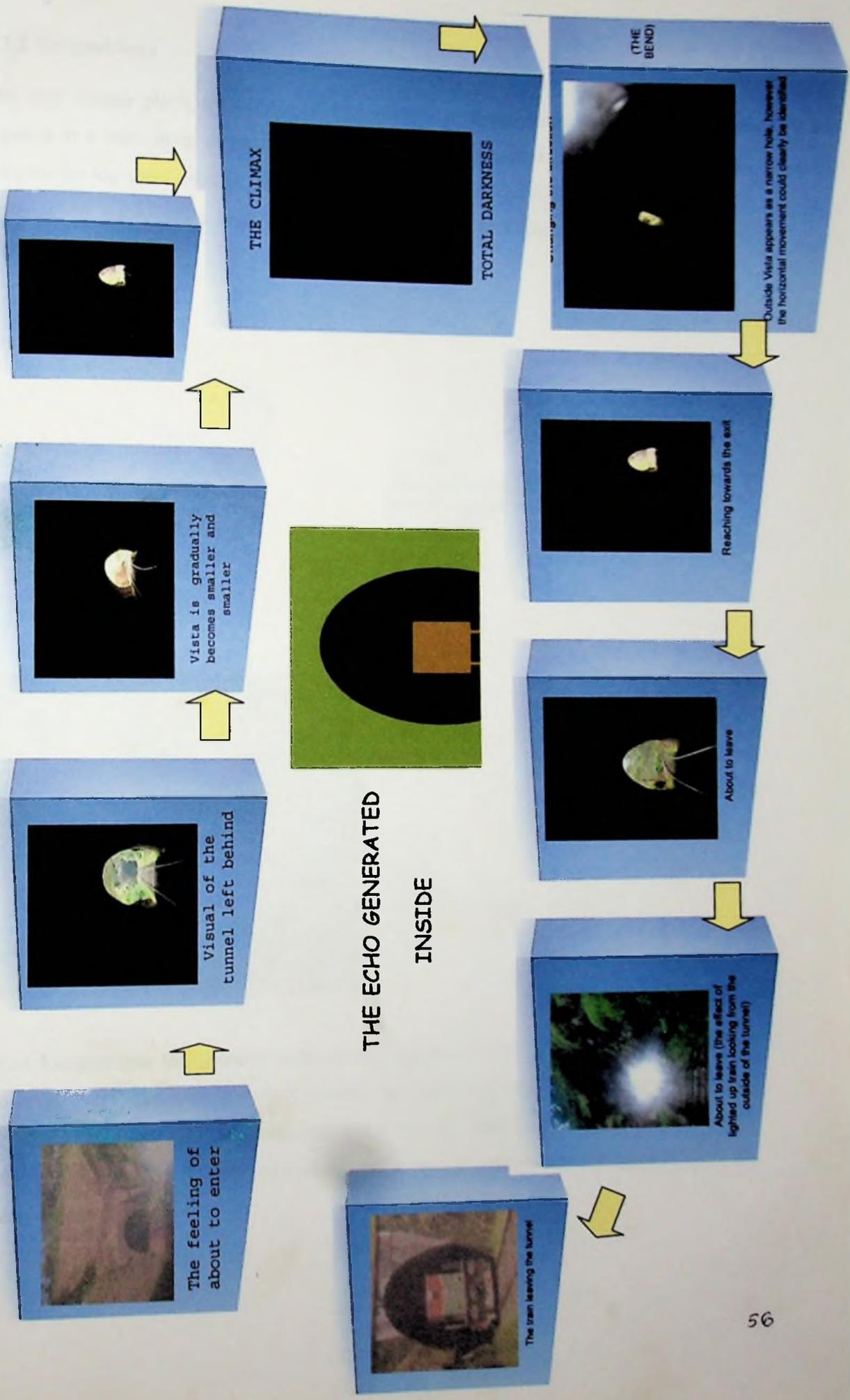


Figure:3.29
The sequence of visual montage :the spatial progression of the landscape generated while traveling by train through planted forests of the highest elevations of Sri Lankan hill country.
Credit: Ranga.

3.3.1-(II)- The moving experience through a tunnel by train.



3.3.2 Idalgashinna

The next unique place, the climax of this journey is Idalgashinna. The railway station appears in a very steep setting which is located on the top of the ridge and rail track follows the top most contour line, The railway corridor expands to a vast area and the plateaus on either sides look more spacious and mostly consisted with natural and manmade forests.

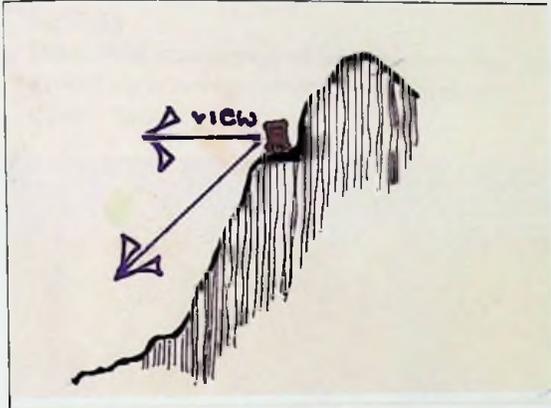


Fig:3.31
The visual corridor just before reaching
Idalgashinna Railway Station from Colombo.
Credit: Ranga.

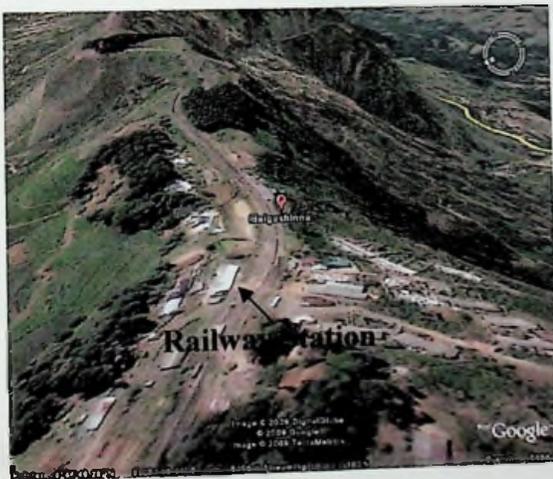


Fig:3.32
Idalgashinna Railway Station.
Source: www.google.com

From Idalgashinna the journey is about two hours to reach the destination – Baddulla. However very fascinating views could be seen between Idalgashinna-Haputhale-Diyathalawa areas. From Idalgashinna hill top the landscape corridor expands up to twenty to twenty five Kilometers towards south east in a height of 1033 meters from the mean sea level.



Fig: 3.33

Dramatical arrangement of Idalgashinna setting linked by the rail track; where the visual corridor expand up to twenty five Kilometers.
Credit: Ranga..



Fig:3.34

Landscape Corridor around Idalgashinna mountain range with cool misty spirit.

Source:www.google.com

The uniqueness of this location is having a dominant cluster of mountain ranges with steep slopes rising above the surrounding landscape.

The strong setting of the topography of this ridge top grades gradually down towards the valley at the bottom closely connecting the lower landscape which is beneath about 600 ft. It is worth remembering here that the elevation of this location is some 1641 ft. above mean sea level.

The locality of Idalgashinna tunnel is also special as the solid mass of mountain above the tunnel is huge. (figure).

Idalgashinna & Demodara tunnels are unique for having such a large capacity of earth mass above them.

3.3.2 (I) Character of vegetative cover through several forests.

After passing Idalgashinna railway station, in few seconds the train passes through several man made plantations of mono-cultures. Casuarina plantations , grown in macro-scale, create a uniform texture on the surrounding environment, strongly towards vertical direction and the effect of blackish green darkness among the plantation is sharply simplified and effective, and concealing and enclosing the train from view.



Fig:3.35-A

Fig:3.35
The moving experience through a "casuarinas"
plantation.
Credit: Ranga.



Fig:3.35-B

In these areas the environmental character is not degraded by human settlements and a calm resort quality is sharply experienced, This feeling is strengthened when the cool mist settles in the surrounding landscape.

Fig:3.36
The character of Ukaliptas plantation with white barks.
Credit: Ranga.



The next monoculture at a height of some feet is huge trees with hardy white barks of “Eucaliptes”. These plantations are successfully grown even on steep slopes and the fallen leaves of trees are visible as if a black carpet contrasts within the white barks of the trees. “Spinifex” is the only grass adapted to this environment. In most situations, this grass grows as a single element. (not as a grass patch); and highlights the blackish carpet of fallen leaves. Another strong character is generated by this contrast.

3.3.3 The panoramic landscape spirit around Great Western railway station

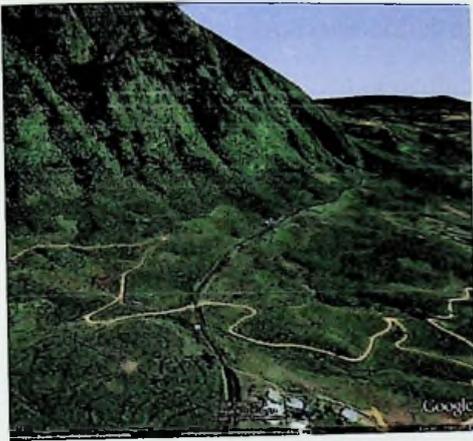


Fig:3.37
The rail track runs touching the foot steps of mountain.
Source:www.google.com

The rail track runs touching the root of huge mountain of “Great Western .” The railway station is located in a very isolated area which is not at all corrupted by human settlements.



Fig:3.38
View from great western mountain on return journey from Badulla.
Source:Ranga.

The opposite side of the railway station is a vast flat terrain of a natural grass patch which the eye catching landscape demarcate with smooth mountain tops which do not exceed the eye level of a person standing on the railway platform. Hence the landscape corridor looks spacious with a pure natural landscape.



A



B

Fig:3.39 A-B The spaciousness around great western railway station.
Source: Ranga.

This is the only place one could experience such a simplified large fore – ground in the highest elevations of third peneplain.



A



B

Fig:3.40 –A,B-The train arriving towards the root of Mountain from Badulla.
Source: Ranga.

The moving experience at the footstep of mountain could see for a considerable time and the surrounding has been sharply simplified by the huge mountain at one side(fig.3.39 A & B) and the grass patch as the fore ground which is so unique.

Conclusion

Conclusion

Travelling is a mode of entertainment and travelling by train across a country which is having the best extract of its visual landscape spirit, is a very rare experience one could gather in one journey and Colombo Baddhulla train trip is the only travelling mode which gives such enthusiasm for the train travelers in Sri Lanka.

It was observed how much this railway viewing corridor has been affected by environmental and visual pollution in addition to various denuding agents. More over the time is not so far, the date that pollute the railway reservation line by unauthorized settlements, haphazard cutouts and dumping yards. Fortunately this vital rail track is not so polluted presently, as it follows a rural path with less inhabitants. However it is high time for the government and local authorities to make arrangements by introducing rules and regulations to keep this railway corridor in its optimum conditions, to protect the great historical character of railway for the sake of preserving natural landscape.

Further more It is emphasized the possibilities to enhance the value of this viewing corridor by expanding and opening out special locations. Feasible opportunities could be organized by proper coordination with of the government as well as private organizations and individuals. Finally the author emphasize and propose to link Colombo Badulla Railway journey which creates an immense value, with the costal line up to Galle which is another travelling phase of this journey, which is having blue to green expressions of Indian Ocean at down south horizon and the extracted spirit of cool mist and panoramic greenish landscape of central mountains. This proposal will create a visual link from the coastal zone of south west and vistas of south east through Ella and Haputhale gaps. Unquestionably this concept will create immense opportunities to introduce the Colombo Badulla railway viewing corridor as one of the most fascinating world heritage lands strips in Asian Countries.

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