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TRANSFER OF TECHNOLOGY AND ITS IMPACT IN ERSTWHILE COCHIN STATE WITH SPECIAL REFERENCE TO THE COCHIN STATE FOREST TRAMWAY.

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Abstract

During the 19th Century, British Colonial power could use technological innovations like the steam engine, railways and telegraph effectively to strengthen their domination over the newly acquired colonies. For this purpose, large scale technology transfer took place from the west to countries in Asia and Africa. However, native states like Cochin had to depend more and more of the British for greater administrative security and regular development activities. The growing demand for labour stimulated the socio-economic life of the colonial population. Due to the exploitative nature of colonial administration, the transfer of technology could not diversify or develop the colonial economy. It did not significantly raise the per capita income also. In other words, though the introduction of the Cochin State Forest Tramway was a technological marvel in those days, it failed to bring any long lasting advantage to the state, and had to be discontinued after the colonial era.

Transfer of technology is the process of conveying technical know-how from one who owns it to another country or organization in order to create new products or services. During the period of colonial administration in the 19th and 20th centuries European technology was introduced for the modernization of the princely States of Cochin and Travancore. The objective of the British controlled native rulers was the attainment of economic advancement of the state, while the imperialistic British administration had its eyes on the immense possibility of exploiting the colonial resources.

The Cochin State Forest Tramway was built for the purpose of the transportation of timber from Parambikulam forests to Chalakudy during the dawn of the 20th century. It was a novel venture, the only tramway of its kind in British India. This meter gauge tramway had 254 bridges and had utilized 70 wagons for its service. The route extended from Parambikulam in Palakkad district to Chalakudy in Thrissur district. The project was completed in 1907. Though the tramway could speed up the timber export and the profit to the British, the revenue of the Cochin State was not benefitted as expected. The cost of the maintenance of the tramway fell into the state exchequer. During the Post-Second World War there was significant loss in the Forest Tramway, due to the economic crisis. After the formation of the Kerala State, the Tramway was discontinued in 1963, because it was found to be unprofitable.

Key Words: Technology Transfer, imperial rule, Cochin State Forest Tramway, end of Tramway.

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Introduction

During the period of British rule in India, the imperial power introduced new technology in various fields in order to expand its efficient administration of the country, especially in military and commercial activities. Among the areas of technological transfer, those like shipping, steam, navigation, electric telegraphs, public works and railways were important. The British introduced better technology in agricultural and industrial enterprises. The Railway was the most significant project of innovation introduced in Colonial India as part of technology transfer from the industrially advanced West to Colonised India.

As Daniel Headrick observes, 'among the many events of the nineteenth century world, the most important event is the progress and power of industrial technology.'[i] It is a feel that technological innovation in the West made far-reaching changes in the growth and development of the modern world. The rest of the world had also experienced the impacts of this technology transfer in the socio-economic life of the people. Consequently it also enriched the economic base of the industrialised West by supplying the essential raw materials, labour and by providing suitable markets for the finished products.

From the historical point of view, if the 18th Century Europe had witnessed the expansion of their empires by human powers, the 19th century saw the dawn of the power of technology which expanded the boundaries of their empires. Daniel Headrick calls it the era of 'new imperialism'[ii]
The British colonial administration of India extended its technologies in almost all parts of India, including the princely states. In fact, technology played an essential role in expanding the British empire in India. Though technology was a tool of imperialism, it brought a significant change in the growth and development of the country. The introduction of technology transfer functioned as a forceful instrument for exploiting wealth from the colonies. The British used Cochin Forest Tramway for colonial purposes with various disadvantages to the natives in due course. However, the impacts of the transfer of technology were far-reaching.

The transfer of Railway Technology was introduced the princely State of Cochin only in the beginning of the 20th Century. Ever since the extension of the Malabar area under the direct control of the British in 1897, the question of introducing the Railway in Cochin State had been under the serious consideration of the authority.[iii]King Rama Varma XV (1895-1914), then Maharaja of Cochin, realized that the introduction of the Railway would initiate the fast growth and development of the state. In 1897, under the initiative of Rajagopalachari, the Diwan of Cochin, a revised scheme was submitted for sanctioning Shornur-Cochin railway extension. The Resident of Cochin and Travancore entrusted its construction.[iv] The State received the sanction from the Government of India in 1899[v]. The Shornur-Cochin railway construction was permitted according to an agreement between the Maharaja of Cochin Sir. Rama Varma and the Madras Railway Company on 1st January 1901.[vi]Consequently, the Railway line was opened for goods traffic on 2 June and for passenger traffic on 16 July 1902.[vii]The Maharaja of Cochin had personal interest in this project. It is stated that the Maharaja sold most of his valuables including the 14 gold elephant caparisons of the family temple along with other ornaments to fund the project.[viii]The King had no doubt that the Railway would help the development of the state, and that it was needed urgently.

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However the motive of the British Colonial Government behind introducing the Railway in India was basically economic exploitation. They wanted to make use of the resources of India to the maximum.[ix] Anyhow, the transfer of railway technology in the state of Cochin brought many changes in the life of the people, their culture and the state's economy. In short, being a port town, Cochin received tremendous development due to the introduction of the Railway.

The State of Cochin witnessed another technological innovation during the dawn of the 20th century. It was the construction of 'Light Railway' or 'Funicular Railway' for bringing teak timber from the deep forests of the Parambikulam valleys by the Cochin government. It was an innovative technological knowhow introduced to Cochin from Europe. It was a technological marvel in those days. This railway made use of two parallel sets of tracks upon which trams were raised and lowered through a cable simultaneously. The trains that were raised and lowered counter balanced each other.[x]

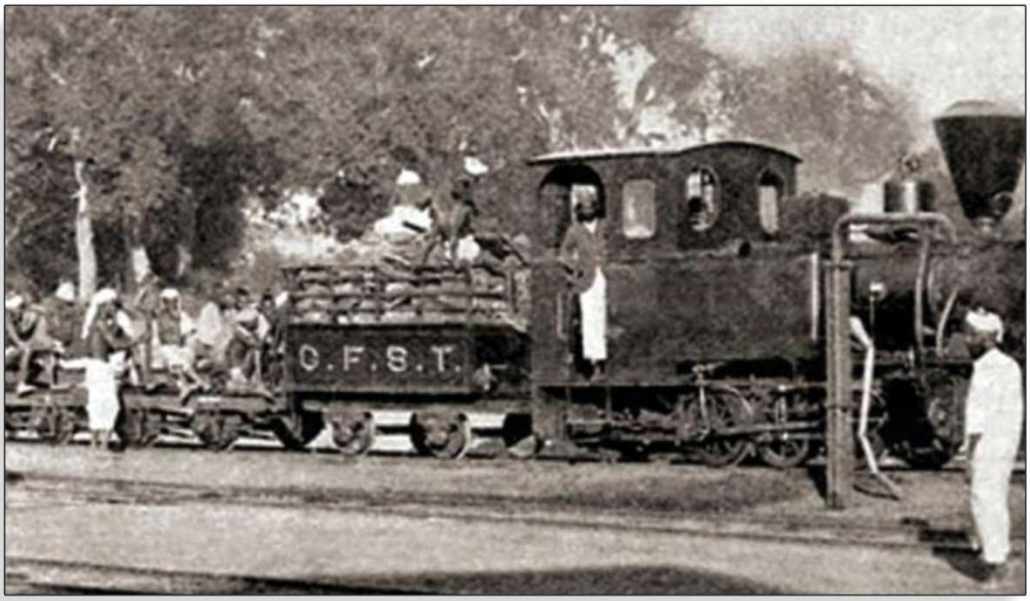
While engineering skills and technical know-how were borrowed from Britain, the locomotives were purchased from Germany. Though the Cochin State Forest Tramway known as funicular railway was a technological wonder. The exploitation of the forest resources of the State in a large scale causing irreparable damage to the State's wealth and environment. It had also its impact on the socio-economic aspects of Cochin and Chalakudy River basin. The technological peculiarities and adaptation of technology in the Indian colonial context, particularly in the State of Cochin, are subjects that require careful study and attention.

The forests of the State of Cochin produced large quantity of good quality timber that could be exported to other parts of India and abroad.[xi]In 1895, when King Rama Varma XV, ascended to the throne, he realised that the forests, which comprised nearly half of the total area of the State were a valuable source of revenue. Since their possibilities were remaining unexplored and untapped,[xii] he decided to implement reforms in forest management so that the State's revenue could be increased. Thus the government started the construction of the forest tramway from Chalakudy to Parambikulam forest to bring teak timber and forest produce.

Even from the beginning of the arrival of the British to Cochin, there were systematic and destructive attempts of deforestation extending up to Parambikulam and Nelliyampathy ranges. The British administrators found that the traditional methods of timber transportation using men and elephants was unsatisfactory. Hence the government had decided to construct the funicular railway in 1894 which extended from Anapandam to Orukumban.[xiii]

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Forest Train at Chalakudy Railway Station
Source: The Forest Train (CFST) at Chalakudy Railway Station
Courtesy : Devan Varma

Maharaja Rama Varma XV secured the services of Mr. V. Alwar Chetty from the services of the Madras Government to supervise the project. Mr. Robert E. Haffield, an engineer from Dublin surveyed the Chalakudy River to see whether it could be used to float down the timber from the interior forest.[xiv] The survey found that the Tramway could serve a total area of 128 square miles consisting of 35 square miles of evergreen forest.[xv]On completing the project an annual yield of 17000 candis of teak and blackwood as well as 75000 candis of hard jungle wood was estimated by Mr. Alwar Chetty. He calculated a minimum net revenue of two and a half lakhs a year, and based on his report regarding the unlimited supply of valuable timber the government of Cochin undertook the scheme of the project.

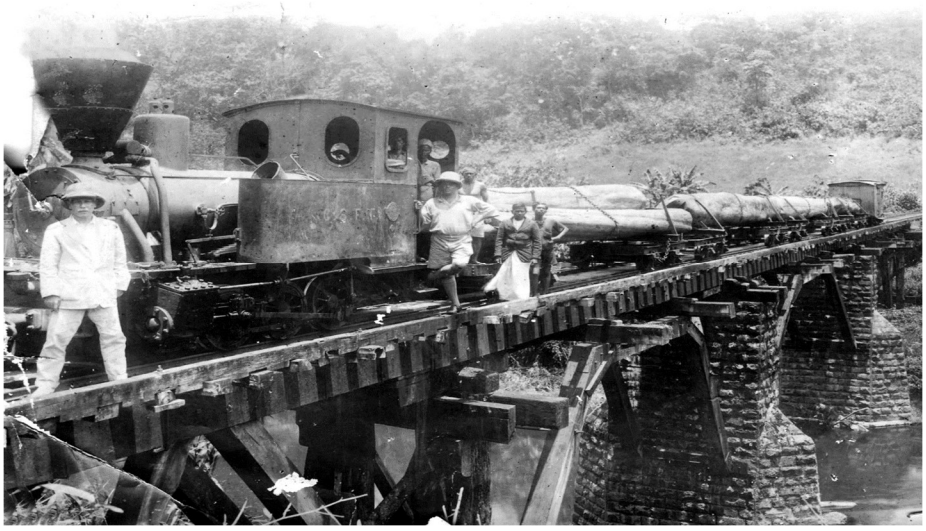
The construction of the tramway commenced in 1901. With the extension of the tram line to Chalakudy, it was decided to substitute manual labour with steam powered traction.[xvi] Railway construction in India in the colonial period was a multifaceted operation which involved a wide range of activities of technical complexity.[xvii] The most challenging task was to prepare a flat and straight way for the rail line. In the case of of the Cochin Forest Tramway, it was filled with more technical complexity than the railway construction because the tramway alignment goes through the hilly forest areas about 2500 feet above the sea level. The peculiar feature of the 'funicular railway' was that it worked with self-acting inclines in the slopes of the hill. It was here that the western civil and structural engineering technologies were introduced into the Indian environment.

Tramway route alignment was the most important activity of technical importance. It was undertaken by Mr. Haffield the Special Forest Engineer assisted by Mr. Babu Sircar, a forest officer.[xviii] The work started in 21 August 1901.[xix] The total length of the tramway is 56 miles, and the gauge is

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one meter. For clearing the tramline unskilled labour was required in large scale. for the laborious work such as the felling of large trees, uprooting the stumps and removing them forest hill men of the Kadar tribal community were used.[xx] The earth work started in 9 September 1901. The contractor who took up the work was incapable of carrying it out as required in the agreement, so the contract was cancelled and the remaining work was given to another contractor. Many labourers who were working in the dense forest area became victims of malaria.[xxi] The tramway construction works suffered considerably owing to sickness among officers and workers. However the contractor managed to continue the work and all works were carried out under the guidance of European engineers.

Track laying in the forest was also a challenging job. The country over which the line passed was very hilly, and hence the process of plate laying needed high labour input. The details of the work were explained in the report of Engineer Haffield.[xxii] In 1901, railway track of the length of ten miles was imported from Orenstein and Koppal company of Germany to Cochin port. It was transported by boats to Karupadanna which is 20 miles away. From there it was carted to the depot at Punnakuzhingarai, at a distance of 27 miles. The sleepers were made of good quality jungle wood.



Source: The Tramway Line Bridge, Culverts and Railway lines constructed by
P&W MacLEELAN Ltd, GLASGOW
Courtesy : Devan Varma

British engineers did remarkable service in the building of bridges and waterways. However, on some occasions the European techniques proved inadequate. Such situations compelled them to borrow traditional Indian bridge building ideas.[xxiii] Building bridges in the interior forest was difficult due to the numerous water and river courses in the hilly areas. The materials for the bridge construction were imported from P & W Mac Lellan Ltd, Glasgow. The firm was in collaboration with Wallace Brothers who were the timber suppliers to the British ship building industry in Clyde. Most of the ships built in Britain in those days used timber from Parambikulam.[xxiv] The whole area of the tramline was hilly except the first 21 miles. The total number of bridges and culverts constructed along the line was 254.[xxv]

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The brides were constructed mostly of wooden beams supported on piles suck in the river banks to a depth of 5 feet. The piles were made of Irul logs 18 inches in diameter erected by elephant labour. There were 13 bridges of more than 12 feet span. The shortest bridge is one span of 12 feet. Most of the bridges were of more than 20 feet span. The longest single span bridge was of 25 feet. The larger bridges were made of iron girders.[xxvi]

The heavy rainfall in the forest was a serious threat to the bridges. Many bridges were to be reconstructed regularly after the working of the tram line started. For instance in 1910, after three years of working the tramway brides numbered 244, 125, 158, 210, 211 and 219 were reconstructed or renewed due to the rainfall.[xxvii] In 1924, the Kuriarkutty River Bridge was completely washed away during a flood.[xxviii] However, the repairs were completed that year itself.

End of Tramway

The Cochin State Forest Tramway established by the Princely State of Cochin 1907 to bring timber from the interior forest. It was a product of European technology introduced by the Colonial government. Due to the superior quality of the transferred technology, the tramway would have continued in proper working condition for many years. However it had to be discontinued in 1963, and the reasons for its stoppage are many. In order to make the functioning of the tramway profitable the management had to transport more timber. For that the forest resources had to be exploited more. It resulted in the destruction of the forests of the area and serious ecological damage. There were also unexpected reasons like the increase of expenditure over income of the Forest tramway. The alignment of the tramway line became costly to maintain. Due to topographical problems bridges and culverts needed to be reconstructed. Unexpected heavy rainfall made reconstruction and repairs necessary again and again.

The great depression of the 1930's produced severe economic crisis all over the world. The worldwide economic distress affected the timber export, and the state government also felt serious financial crisis. After the world wars the demand for teak and rosewood in the world market declined. In spite of these difficulties the working of the tramway continued. Labelled as a white elephant, the government wanted to wind up the establishment. In 1950 a special committee was constituted under the the Chairmanship of the Chief Conservator of Forest. Though the tramway staff and the employees union resisted, the government decided to discontinue the tramway according to the special committee's recommendations.[xxix] The final decision to stop the working of the tramway was issued by the government on 23-11-1963 and the technological wonder started in 1901 came to an end in 1963.[xxx]

Conclusion

European colonization adopted technology transfer in many colonies in the past, and its impact is still being experienced by many countries in the present day. In the contemporary situation of globalization, countries aim to achieve a unified worldwide standard of technology. During the 19th and early 20th centuries, colonial governments utilized technology transfer to exploit natural resources and destroy traditional cultures. Technical innovations opened new paths of development essential for the well-being of the colonial administration. The colonial approach was primarily motivated by profit-making enterprises, which naturally ignored the environmental and cultural factors involved.

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However, the establishment of the Forest Tramway, the development of the timber trade, the availability of natural resources, and the start of industries in the Chalakudy River Basin accelerated the process of migration during the first half of the 20th century. The introduction of the Cochin Forest Tramway attracted a large number of people to the area, including skilled and unskilled workers, merchants, and their family members. Among the settlers were Anglo-Indians, Latin-Christians, Tamil-speaking Muslims, and Anglicans. The study reveals the socio-economic impact of migration on the Chalakudy River Basin during the 20th century. Notable developments include the growth of the timber trade, the increase in the wood industry in Chalakudy, and the transformation of the village into an industrial area. The socio-economic progress in the Chalakudy River Basin demonstrates that the establishment of industrial and commercial institutions has improved the living conditions of the inhabitants.

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