



## Industrialization and its impact on environment in colonial Assam.

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### Abstract

The British occupation of Assam brought a revolutionary change to the economy of Assam. Gradually Assam not only lost its self-sufficiency but also lost its trade relation with other foreign countries. The tea, coal and oil industries created a new demand and opened up fresh avenues for the development of ancillary industries. It had far reaching impact upon the socio-cultural, political, ecological as well economic sphere of the people of Assam. Industrialization led to the encroachment of forest. Industrialization also affected the environment of Assam in many ways. The main objectives of the work is to examine the impact of industrialization on environment during that period. An attempt has been made to show through coal, oil and tea industry how the natural resources of Assam were exploited by the British government to suit their colonial motives and what was the benefit of the local people.

**Keywords:** Tea Industry; Coal; Timber Trade; British Rule; Wage Labour.

### 1. Introduction

Assam is a paradise of rich biodiversity and comprises of the Barak and Brahmaputra valleys. It is an incredible State which is one of the important parts of Northeast India. It is a land of all stocks of human races like Proto-Australoid, Mongoloid, Dravidian, Aryan etc. All these stocks of human races contributed in the formation of a composite culture in Assam. It is the land where the mighty Ahoms ruled for 600 years. As such, the 19<sup>th</sup> century has a great importance in the history of Assam. It witnessed the collapse of the Ahom monarchy and entry of the British. The British rule led the Indian society on a new and different path of development. It initiated some basic changes in the economic, political and social lives of the people of India. In Assam after acquiring the political power of the country they introduced a new administrative system in the province. They utilized vast tracts of uncultivable land and forest resources to suit their economic interests. The most important aspect of the British rule in Assam was the establishment of modern industries.

Tea plantation which was inaugurated by the British rule became the backbone of the economy of Assam. Tea industry was the first capitalist enterprise introduced by the British in Assam in the 19<sup>th</sup> century. Development of coal mining was another achievement of the British rule. In the thirties and forties of the 19<sup>th</sup> century, oil fields were also noticed in different parts

of Assam. The development of coal, oil and tea plantation necessitated the development of transport and communication system of Assam. The objective of this study is to examine the impact of industrialization on environment during that period. An attempt has been made to show through coal, oil and tea industry how the natural resources of Assam were exploited by the British government to suit their colonial motives and what was the benefit of the local people.

### 2. Tea industry of Assam

Tea industry is the first capitalist enterprise introduced by the British in the early part of the 19<sup>th</sup> century. It is the largest labour oriented agro-based industry in Assam while tea is one of the major export goods of Assam. In 1815, the British government came to know about the presence of tea-plant in Upper Assam. Soon after major Robert Bruce actually discovered tea plant in Assam in 1823 at Balipara near Tezpur. The first government plantation was located at Sandbank near the confluence of the Brahmaputra and the Kundil rivers. But the experiment proved to be a failure due to its poor and porous soil. The plants were therefore transferred to Jaipur and was placed under the supervision of Chinese observers but was sold-off to the Assam company. The Assam company was not only the pioneering tea company in India but also was the founder of the tea industry outside China.

But the development was very slow. From 1852 it got prosperity and in 1859 it had about 4000 acres under cultivation. When plantations were opened to private capitalists it developed rapidly. Majan Tea Company and Jorhat Tea Company started gardens in different parts of Upper Assam. In 1872 actually 27,000 acres were under tea plantation in the Brahmaputra Valley, 23,000 in Cachar and 1,000 in Sylhet. There was a phenomenal increase in acreage under tea during the period of 16 years between 1884 to 1900. There was 92% rise in the area under tea during this period. During the fifty years period between 1900 to 1950 the acreage increased only by 48%. The number of tea gardens in Assam which was 906 in 1924 increased to 1120 in 1938-39. The production of black tea in the tea gardens of Assam increased from 99 thousand tonnes in 1933 to 118 thousand tonnes in 1938. Further the daily average number of labour force was 4,97,106 in 1924, 4,86,250 in 1938 and 4,89,425 in 1938 (Alam, 1987)

As land was being abandoned in Assam so a set of rules was necessary to attract the European planters to come to Assam. The first rules were issued in 1838. According to this wasteland settlement rules any tract of wasteland from 100 to 10,000 acres had given on a 45 years lease, with a rent-free period of from 5 to 20 years. On expiry of the lease, one fourth of the area was to remain free from assessment and the rest was to be assessed at the option of the grantee, at one fourth the gross profits (Handique, 2004). The Wasteland Settlement Rules were revised repeatedly to develop the industry. In 1862 Fee Simple Rules was passed which provided rent free lands to the tea planters for whole life. The terms of the wasteland rules were favourable for the European tea planters. The planters did not intend to plant the entire area with tea. But they utilized the vast natural resources for their own benefit. Of the 364,990 acres, only 27,000 acres were under tea (Goswami, 2016).

Although the tea planters were the largest land owners, they contributed the least to the revenue of the province. Therefore, the burden of taxation fell more heavily on the peasants or the cultivators. As a result, many peasants became landless. On the other hand, the tea industry of Assam faced acute shortage of labour from the beginning. The self-sufficient Assamese people never wanted to work as a wage labour. So, the tea planters were compelled to depend upon the labourers brought from outside the province. From 1863 to 1901 a series of Acts were passed related to the importation of labour. They brought labourers from Bihar, Orissa, Chotanagpur, Dacca, Chittagong and even

distant places like Madras and Central Provinces. Many workers who came to work in the tea gardens, they did not return to their homeland. After, they settled down there as cultivators and so help to bring virgin soil under cultivation. In 1923 such persons occupied 263,000 acres of land direct from the government. In the report of the census of 1921 it was estimated that the total number of immigrants to tea gardens and their descendants numbered about a million and a third or one sixth of the total population. The census report of 1931 showed that there were 14 lakh *coolie* people in Assam. On the other hand, in 1971 the total number of tea tribe's population in Assam stood at 22.5 lakhs and they form a separate class of society with their distinct identity and culture (Bora, 2007). One of the important features related to the tea tribe's population of Assam is that they never impose a threat to the culture and identity of the indigenous people of Assam.

It is seen that the hygienic condition of the tea garden workers was not good. Moreover, there were instances of outbreak of cholera or malaria epidemics causing heavy casualties on labourers. Though there was a law prescribing minimum monthly wages of Rs. 5 for man, Rs. 4 for women and Rs. 3 for children but it was not properly implemented.

### 3. Discovery of oil

The exploration of coal and petroleum in Upper Assam inaugurated a new economic order and commercial opportunity for the British. In the thirties and forties of the 19<sup>th</sup> century oil fields were noticed by the British in different parts of Sivasagar and Lakhimpur districts of Assam. But no large-scale operations then were started as the demand for mineral oil was very limited. It was in 1854 operations of oil springs on a commercial scale were started at Makum by Wagentrieber. With the development of road transport and the establishment of Public Works Department in 1865, several wells were drilled near Margherita and Jaipur in 1866-68. In 1889 the Assam Railway and Trading Company (ARTC) started its operations of oil boring at Digboi and within a year could produce about 200 gallons of oil per day (Baruah, 2015). In 1901 the first lot of kerosene from Digboi refinery appeared in the market. By 1926, a wide variety of products like jute, batching oil, wax and different lubricants, apart from kerosene, petrol and diesel were available. In 1899, 14 wells were drilled at Digboi as well as at Makum and Assam Oil Company was formed with its headquarters at Digboi. In 1901 they commissioned the Digboi Oil Refinery with a

production capacity of 500 barrels per day. The Burma Oil Company (BOC) assumed technical control of the Digboi Oil Refinery in 1921. The association of the BOC led to the development of oil industry in Assam.

It is seen that all capital in the oil industry were invested by the Europeans. So, it had a few contributions towards the benefit of the local people. On the other hand, as the industry was highly technical so they imported skilled labourers to the province. But, the general condition of the workers was very miserable. Low wages, lack of sanitation and ill-treatment of the authorities were some basic problems faced by the workers.

#### 4. Development of the coal industry

Coal was another important industry during the British rule, through which the wealth of Assam had been drained to Europe. Although the existence of coal in Assam was noticed by the British officials as early as 1825, sufficient attention was not given to explore the coal fields. The name of Lieutenant Wilcox (revenue surveyor posted at Sadiya) is associated with the notice of the existence of coal in Upper Assam. In 1838 government appointed a coal Committee to make enquiries and present an official report. It reported that due to the lack of communication facility the coal could be not be supplied to Calcutta as a cheaper rate than the coal from Bengal.

The Assam Railway and Trading Company opened up the Makum Ledo coal fields in 1882 and continued to work in various other coal fields of Upper Assam. Though the government knew about the existence of coal in Jaipur, Nazira, Jhanzi and Desoi but the poor progress was made in the execution of mineral.

A major hindrance in the development of coal in Assam was the lack of transport facility. It became impossible to navigate in the Brahmaputra during the rainy season. On the other hand, the government steamer was not regular. Scarcity of labour was another major problem for the coal industry. As the local people were not willing to work in the coal mines so they recruited workers from other places. The Ledo and Tikak fields were worked mainly with contract labourers under the labour and Immigration Act. According to the Act the employees were obliged to maintain the labourers in good health. But it was not maintained by the authority. The unhealthy condition of the mining workers was pointed out in the inspection remarks of the medical officer. He observed that impure water and long working hours, underground were the main factors of the high death rate in the

mines. Construction of Dibru-Sadiya railway line in 1881 became a milestone in the development of coal industry. Two years later, the major coalfields were connected with the railway line. As a result of the development of transport and communication construction of many collieries like Namdang (1896), Ledo New East (1903), Tirap and Ledo New East (1904), Borgolai (1909), Tipongpani (1924) and Namdang Dip in 1904 also got developed. All these mines were operated under ARTC.

In the beginning of the 20<sup>th</sup> century Assam had become self-sufficient in coal. In 1903 the total output was 293,000 tonnes. There were 12,000 miners under the supervision of nine Europeans (Goswami, 2016). The increasing demand of coal was arranged by immigrant labourers and maintained by foreign capitalists. The indigenous people were untouched by the coal industry. On the other hand, the owners sent their profit to their own homeland and brought finished goods to the province. Assam turned into a market for foreign goods and supplier of raw materials.

#### 5. Emergence of timber trade

The establishment and growth of tea, coal, oil led to the development of timber industry in Assam. Timber became a good of huge demand due to its requirement for tea chests, railway, sleepers, bridges, plankins, post, buildings and other purposes. It resulted in the exploitation of vast natural resources of Assam. The diversified elevation of land produced valuable trees like *Sam*, *Sal*, *Ajhar*, *Nahor*, *Poma*, *Titasopa*, *Gomari*, *Uriam*, *Bola*, *Koroi* etc. Nearness of the forest to streams and rivers gave facility for easy transportation to the Brahmaputra on which the main trading centres were located.

At first, timber operations of the forest department were on small scale. The trees were generally turned into logs in the forest carried by elephants. Fifty logs of *Sal* were brought to Gauhati and sold by public auction expecting a net profit of Rs. 8-9 per log. 150 *Sal* trees were sold in the forest at the rate of Rs. 8 per tree. In 1872, the Assistant Commissioner of Forests, therefore, decided to bring out the fifty logs of timber with the help of the Department's elephants and auction it at Gauhati resulting in a rate of Rs. 742-8-0. Trees could be felled only with official permits, and a royalty, at the rate of 4 *annas* per cubic foot and Rs. 12 for each unreserved tree.

The British government realised the necessity of saw mill as the tea planters produced tea boxes on their estates for Rs. 19-12 *annas* a piece on the other

hand it bore only Rs. 1 in a saw mill.<sup>16</sup> The first saw mill was run by steam and established on the Dihing river. Gradually, the numbers of saw mill increased due to the demands for railway sleepers. By 1901 there were 14 saw mill in the Brahmaputra Valley.

Another important industry related to timber is plywood industry. For the manufacture of plywood, light but solid wood is required. This is a forest-based industry. The main demand for plywood in Assam is for making chests. The first plywood factory was established in 1882. But it was only after 1918, when the Assam Saw Mill and Trading Company was flourished this industry developed.

## 6. Impact of industrialization on environment

Industrialization is a worldwide phenomenon in present era. The British had played an important role towards the industrialization of the state. Industrialization has very far reaching impact upon the people of Assam. The immediate result was deindustrialization or decline of handicraft industry. It compelled to depend the ryots on agriculture. By the beginning of the 20<sup>th</sup> century, capital, labour, enterprise, trade and craft were all represented by the Europeans.

### 6.1 Emergence of towns

With the establishment of British some new towns emerged in different parts of to the province in association with the development of transport and communication, growth of coal and oil industry. Urbanization and industrialization have a link with each other. But it is seen that the towns were mostly the centres of civil administration. In 1921, the number of towns increased to 22 as compared to 10 towns in 1901. The important towns among these were Tinsukia, Lumding, North Lakhimpur, Doom Dooma, Palasbari, Gauripur etc. The growth rate of urban population became 3.68% per annually during that period. In 1941, the proportion of urban population in the state became only 3%. The urban population in the state however witnessed a significant increase during 1941-51. The rate of population increased not because of the high birth rate but due to immigration from outside.

During the British period towns were too small in respect of area and population. Land was reserved for different purposes in those days. But growth of population combined with diversification and intensification of urban functions over the years without proper planning have resulted in overcrowding in the public places and congestion of traffic in urban areas. Besides lake of maintenance of drainage and sometime

absence of proper drainage results in stagnation of drain-water. It makes the urban areas unhealthy.

### 6.2 Encroachment on forests

Forests play an important role in the economic sphere of a country or state. It has great influence on climate, rainfall, water supply, flood control, soil erosion, fertility of soil and degradation of soil etc. It supplied various industrial raw materials and fruits, firewood and fodder. Encroachment on forest land was another important impact of industrialization. It happened due to the large-scale immigration to the province. Rapid growth of population during the latter part of the British rule put on pressure on land. The illegal migrants gradually began to grab the forest land, especially the reserve forest.

Degradation of forests was not a problem during the days of the British. The vast virgin forests in Assam provided rich economic potential to the British government to suit their colonial motives. But they also had taken steps for conservation of forest. The first way of forest conservation was taken by Jenkins (the Chief Commissioner of Assam). Nambar forest of Sivasagar was declared as reserve forest as its first step. A sum of Rs. 150 had been sanctioned per month by the Government of India as establishment cost. In 1868 the forest department of Assam was established. Exploring of timber in the province was authorised to an officer posted in Assam under the Forest Department.

The British government set up certain experimental plantation for artificial production to extend the export of trade. Teok plantations were accordingly started at Makum, Jaipur, Kulsu but it did not provide good result. Seeds of various European trees which were planted also failed to give good result. So, they decided the extension of local trees such as *Sal*, *Poma*, *Titasoppa* and *Sam* etc. Abandoned forests provided the British to explore raw materials and they earned profit. But the local people were touched out from the benefit of the exploration of the forest. Instead of it imposition of grazing tax by the British had lost their right to feed their domesticated animals on grassland.

## 7. Impact of coal mining industry on environment

During the British rule coal is mined in small hole mining or underground mining. There was not open caste mining like today. Coal releases numerous toxic pollutions into the air, water and land. It affected ecosystem and endanger human health. It may be led to cancer, damage the nerves and immune system and

damaged reproduction capacity of human being. Coal mining in Tinsukia district (Makum Coal Field) affected the health of the local workers and neighbours. As a result, of prolonged exposure to processing and mining equipment the workers lost their hearing and they also suffered from heat stroke and exhaustion. Sometime, the mine workers and their families reside near the coal mines. They faced problems like injury and suffocation at abandoned mine site. In some coal beds women were employed in some activities such as cutting, sorting, carrying, loading and unloading. Dust, pollution severely affected their health. As they were recruited on a contractual basis, they had no economic security. The work timing and the work condition, leave facilities etc. have a contribution upon the health. The women suffer from numerous illness such as respiratory problems, silicosis, tuberculosis, leukaemia, asbestosis etc. Rate of infant mortality rate have increased and the reproductive capacity of women have gradually decreased. It also may create social imbalance. The process of recruiting labourers in coal fields and other oil fields and tea plantation reflected their nature of administration that only wanted economic benefit.

## 8. Conclusion

To sum up it can be said that the advent of the British inaugurated a commercial revolution and established a new type of economy. Industrialization occurred in certain areas of the province to satisfy their colonial interest. But the evil effects of industrialization were far reaching and harmful for all

inhabitants of the province. There were no important industrial sites like other provinces of India. The economy of Assam had been traditionally based on agriculture and supplemented by the village handicrafts. On the other hand, de-industrialization led to the decline of some old towns. To satisfy the European tea planters, vast tract of wasteland had been transferred to the hands of the Europeans. But much of land was left fallow and underutilization of plantation. Another far reaching impact of industrialization was that it led to the changes of the demographic pattern of the state. Industrialization did not lead to urbanization in a large scale but to a increase pressure on land. On the other hand, the European capitalist class did not give importance to the planned urbanization as a result it polluted the surrounding environment. The owner of the industry ignored the basic facilities to be provided to the workers such as drinking water, sanitation, medical facilities etc. They also worked in a very unhygienic condition. Tea industry, Coal and Oil were owning and managed by the foreigners, as a result, major portion of the dividends was transferred abroad, only a little was left for investment in Assam. There was a dual economy in Assam during those days one modern sector and traditional subsistence sector. Simultaneously a modern transport and communication system also developed with the growth of river, railways and transport service besides postal and telegraph. It facilitated the import of manufactured goods to the markets of the province and export of raw materials from the province.

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