CHAPTER- 5

MODERNIZATION AND ITS IMPACT

Modernization is a concept that refers to process in which society goes through industrialization, urbanization and other social changes that transform the lives of the people. In the second half of the 19th century in India, modernization in the field of polity and economy more especially the industrializational has resulted into urbanisation which ultimately had its effect on the ecology. In fact many of the major development in transport and communications which took place due to technological changes had its impact on India. For instance, railways, roads, canals, and bridges were rapidly built in India and telegraph links equally established in order that raw materials such as cotton from India's hinterland could be transported more efficiently to ports such as Bombay for subsequent export to England. Similarly, Jammu and Kashmir State could not be left untouched with the process of modernization taking place in India.

Since the time of Raja Ranjit Deo, Jammu witnessed comparatively better economic growth. But, it was under, Maharaja Pratap Singh that Jammu region saw several infrastructure development initiatives like construction of roads, irrigation, railways, telegraphs, industrialization especially the process which continued till the accession of the State to Indian Union. During the time under study Jammu turned into a hub of trade with liberal economic policies of the Government. Infrastructure was developed to increase the efficiency of the Government and to boost economy.

Though, these developments helped in strengthening the economic condition of the State but simultaneously it directly or indirectly affected the ecology of the region.
DEVELOPMENT OF SURFACE TRANSPORTATION INFRASTRUCTURE

In the past there were no organized industries in the State other than those connected with the forest. Valuable mineral deposits and various small scale industries like cottage industry, sericulture, and handlooms existed in the State but it had not been yet reached a point where it could be exploited profitably on a large commercial scale. The State’s economic development depended upon successful exploitation of its forests and mineral and all these could be exploited profitably only after an easy access to them was ensured. As, the principal requisites for the development of the region completely dependent on sound system of communication. Similar was the case in the region, the greatest need required to exploit these sources was improved roads and communication without which no real development was possible.

Easy accessibility plays imperative role in the prosperity of an area. It also required for speedy travel. However, as far as road and railways are concerned, the State of Jammu and Kashmir was at disadvantageous position due to its mountainous terrain. In hilly areas, connecting various towns through road required building of bridges and tunnels. Moreover it required sufficient funds which the Government was unable to provide. However the road network in Jammu, which initially was developed for carts and horses was gradually upgraded to pukka roads for making them motorable.

There were several causes which compelled the Government to take the projects of major and minor roads construction. All these causes have been explained in detail in this chapter.
1) **MAJOR ROAD**

**Banihal Cart Road**

The means of communication were not developed in the State till 1889. Within Jammu region there were local pedestrian tracks which were repaired very often and managed by local zamindars, Revenue Department and the Forest Department. There condition was very deplorable especially in hilly areas during rainy season. Transport system within the State was in bad condition. The region was cut off from the rest of India.\(^1\)

In fact, there was no direct road link between two capital cities of Jammu and Srinagar. To reach Srinagar, people from Jammu used to take rail journey up to Rawalpindi. Travel from Rawalpindi to Srinagar used to be tiresome and expensive. This necessitated a direct road link between two major cities of Jammu and Srinagar.\(^2\)

There was one more reason which forced the State to speed up the work of road communication. During Anglo-Russian war, Kashmir acquired an important place in the eyes of British. They felt that Russia might advance through Central Asia and attack them from Kashmir. As the British were controlling the administration of the State indirectly through their Resident, so at that time it was decided to link up the valley by a cart road with the railway head at Rawalpindi.\(^3\)

In 1901-1902 the Government of Jammu and Kashmir started work on the Banihal Cart Road linking Jammu with Udhampur. This project was completed in one year at an outlay of Rs 37,425/-. The construction of the Nandani Tunnel on the road entailed another expenditure of Rs 14,932/-.\(^4\)

In 1911-12, Government formulated a scheme to widen the route from Udhampur to Banihal in order to make it fit for cart traffic. Next year the work was started on the road, but then the State Government decided to make stretch
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from Jammu to Banihal, and up to Srinagar, ready for wheeled traffic. The 300-km-long Jammu - Srinagar road, which passed through Patnitop at around 7000 feet and descended to the Ramban Valley and ascended to Banihal Pass and then dropped again to the Valley, was completed at the cost of Rs 41,08,850 against the sanctioned estimate of Rs 42,51,114. The road passed over Banihal Pass through 660 feet long tunnel. It was first opened to traffic on 2 May 1921 when there was annual “Durbar Move” from Jammu to Srinagar. For the people, the Jammu-Srinagar road was opened a year later in May 1922.5

It was also described as “the triumph of modern road engineering”. It gave a considerable boost to trade by providing connecting a cheaper travel, connecting Jammu and bigger towns of Punjab like Lahore, Sialkot, Amritsar and Kashmir Valley. This road was used during winters because the Banihal pass was closed for a number of months in winters.6 This road gained great importance in 1939’s when the volume of traffic had increased. In 1931, 14,017 motar lorries, 3,612 motar cars, 495 tongas, 63 ekkas and 197 bullock carts passed through this road. The average road toll received was rupees 2,00,000 per annum.7

The Banihal Cart Road gained more importance and popularity due to its utility. It also generally preferred by those option for those who wanted to avoid rush of traffic on the Jhelum Valley Road.8 Time by time further improvements were made on this road which included cutting of corners, strengthening of bridges, culverts, rebuilding of retaining and breast walls.9 However, this alteration was made at the cost of disturbing geography of the region.

2) **MINOR ROADS**

A major exodus in the 19th century took place in the region during the famine of 1877-79. The famine was caused due to shortage of *Shali* crops in the State godowns. In that year, during autumn season, people harvested *Shali* crops
which were damaged by continuous rainfall which fell for two and a half months. Till spring season there was no sign of famine as the grains in the store were being sold to the people. But immediately after spring season, there were no grains for seeds left and as a result no fresh cultivation could be done. Thus, famine began to rage severely. The after result of this famine was very drastrous. As, there was no direct *pukka* road from Jammu to Kotli and Reasi, so it was difficult for State Government to send food to the effected *tehsils*, as a result, these two *tehsils* suffered a lot for want of food. The most affected *tehsils* were Kotli and Reasi. In Kotli *tehsil*, the *kharif* crop failed and as a result famine prevailed and lasted after twenty eight months.\(^{10}\) Ranbir Singh Pura also suffered by this famine and the scarcity of food forced the people to live on *mena* (a kind of fodder grass) and when it was not available, people of this region in order to survive, move from one place to another in search of food.\(^{11}\)

Epidemic like malaria in 1908-1909 dropped the trade to virtual low level in Jammu region. Another natural disaster occurred in the region in 1910, i.e., a major flood ravaged the township in Jasrota *Wazarat*. This flood changed the course of river. The straw houses on the left bank of the *khad* were greatly damaged. Similarly, buildings on both the banks were surrounded by water. The loss was small and was estimated at one thousand fifty six hundred nine rupees.\(^{12}\) Entire infrastructure, including residential houses in the town was surrounded with water. Similarly, several floods continued to hit the region intermittently. But the flood of 1914 was recorded as the highest flood in Jammu as the drainages crossed by Ranbir canal were overflowed and the breaches in the embarkments of the canal were damaged by this flood.\(^{13}\) In 1917-18 flood in Tawi river damage the new pumping plant of the Jammu water works in the city.\(^{14}\)
On the other hand, led by heavy rains, once again the epidemics also hit the State badly. In order to overcome the damage to life and agriculture produce due to floods, the then royal Dogra Government in State initiated several preventive measures. As per the facts available, the initiatives like constructing spills channels were first taken in Kashmir valley. Some minor protective measures were also carried out in the Jammu region. Steps were taken to protect the suspension bridge and also to prevent the Tawi river due to flood by cutting its way between the bridge and Rani temple below Gumat. The construction of boulder spur in Kathua was undertaken on the recommendations of the Divisional Engineer, Jammu Division, to protect the town from floods in Kathua and Hamirpur- Sidhra areas.

Epidemics continued to hit the State. For instance, influenza in 1918 and plague in the year 1923 spread in the region. As per records available for thirty year from 1891 to 1921, Jammu city registered a net loss of 7.6 per cent in human population. This was mainly due to the loss of life caused by plague which frequently broke out in the city.

These floods, famines and other natural calamities caused great damaged to the crops as a result of which, region faced great scarcity of food and fodder. They damaged crops to great extent that the region also faced widespread scarcity of food and fodder. Though all of them did not cause major damage to the property, yet they were instrument in effecting gradual change in geography. Natural calamities, like floods and impact of famines and epidemics were reported at different period in the region.

Natural calamities, like famines and epidemics, had their negative impact on living organisms also. Many people died while on the move in search of new places. Such natural calamities made living organisms weak and resistance less to several diseases. Several animals died due to scarcity of food while many others
lost life to various diseases. Apart from increase in the death rate, it slowed down the growth of human as well as animal population.

It was only after such natural disasters especially the effects of the great famine in Jammu and during the rule of Maharaja Pratap Singh, the Government realized about the necessity of road communication in swiftly providing relief material to the affected areas. New experiments in the system were made to meet similar crises in future. These new experiments brought modernization in the State at the cost of exploitation of natural resources.

Thus, the Government felt the need and importance of roads in the region and soon undertook the construction of minor roads in order to facilitate the import during the time of urgency. New experiments in the system were made to meet similar crises in future. Thus, onset of 20th century saw a fast paced infrastructure development in Jammu region as the erstwhile Royal Government started several minor road construction projects in Jammu region for speedy transport of food grains and other assistance to meet the requirement of population in far flung areas in the State.

Moreover, many link roads to the Banihal Cart Road gradually came into existence which in turn connected more and more rural areas to the bigger towns of Jammu and Kashmir State. As, the region of Jammu comprised many scattered towns, a need of better road connectivity was felt in order to boost up trade meet in the State. Some of the minor roads have been discussed below.

**Akhnoor-Hamirpur Sidhar Road**

The construction of this road was started during the period of Maharaja Hari Singh. It was a 21 miles long *kutcha* road which passed along the mainline of the Pratap Canal up to its tail it takes a turn to Hamirpur Sidhar. It was also proposed to extend this road.¹⁵
This was a *kutcha* road and if extended to Manawar, as was proposed, Jammu would have been connected with Mirpur through an all State route leading to greater security and prosperity of his highness subjects in Mirpur *Wazarat* and Akhnur *tehsils*.\(^{16}\)

**Batote-Bhadarwah Road**

Public had to face much hardships because there was no road to Bhadarwah, which was fit for wheeled traffic. Trade also suffered because of this. Thus, Durbar decided to construct fair-weather motor road from Batote to Bhadarwah. The road was opened for traffic in 1943. This road was 55 miles in length. It also, boosted trade as trade fastened between the Bhadarwah and Kishtwar *tehsils* and the Udhampur and Jammu districts.\(^{17}\)

**Doda Kishtwar Road**

There was no *pukka* road on this track. The travelling for people was much inconvenience and trade of the area also suffered a lot. In 1941, a project to construct road from Doda to Kishtwar was passed by State council at an estimate outlay of 6 lakhs.\(^{18}\)

**Jammu-Kathua Road**

Opening of this road for Lorries opened out the part of State which has good quality rice producing areas. It reduced the travel between Jammu and Kathua to around four hours which public earlier used to cover in at least two days to reach Kathua district headquarters through a circuitous route\(^{19}\) as there was no direct route from Jammu to Kathua. To reach Kathua, one had to travel from Jammu to Pathankot via railway and then came back to Kathua by tonga or on foot. This road was most significant in connecting Kathua and Jammu districts.\(^{20}\)
Kathua-Basoli Road

Previously, there was a bridle road whose length was 24 miles. Out of 24 miles, 18 miles of the road passed through hilly tracts. This road was not fit for wheeled traffic till 1930. However, in 1930 this road was made fit for wheeled traffic for first nine miles. Later in 1940, the complete road was made fit for wheeled traffic.

Katra-Suketar Road

This motorable road branching off at Suketar and terminating at Katra town has brought the head quarters of the Reasi district nearer to Jammu and was a great boon for the pilgrims to Trikuta Devi.

Mirpur-Chenani Road

There were several resources located in the nearby villages of Mirpur and Chenani. To develop and exploit the resources and trade, State Government constructed this road in 1929. During 1931, disturbances its utility for military purposes was established when it served a very important and useful purpose in carrying State and British armed forces to quell the agitation in Mirpur and its surrounding areas.

Patnitop to Sanasar Road

To develop the summer station of Sanasar, the Kashmir Darbar constructed a fair weather road from Patnitop to Sanasar in 1939. This road was 10 miles in length.

Samba Road

The Dogras rajputs had stronghold on Samba district. Every day number of people travelled from Jammu to Samba and vice versa. Keeping into consideration the traffic on this road, State Government constructed a Pukka road
from Jammu and Samba. Till 1931 only 17 miles out of 21 miles of this road was metalled and wire netting had been spread over the sandy portion to facilitate traffic.26 This road was open for trucks and motors which reduced the travel time between Jammu and Samba to one hour in a lorry.

**Saria to Nowshera**

By the end of 1937, a road from Saria to Nowshera was constructed. It was 15 miles in length. This road was opened for wheel traffic in December 1937.27

**Udhampur Ramnagar Road**

To travel from Udhampur to Ramnagar, people had to travel by *kachha* road. Moreover, because of lack of bridge over Jammu Tawi, people were bound to cross it through ferry. Seeing the miseries of people, the State Government in 1940, started construction of the road and by the end of the year, this road was completed.28

Again there were few roads and paths which were constructed by the Forest Department to facilitate the transfer of forest products to different markets. Besides helping the Forest Department, these roads also proved to be of boon to the travellers and traders. The greatest beneficiaries of the roads constructed by the Forest Department were the people of Udhampur district in Jammu region.29 The Forest Department was not at all unreasonable in claiming in 1904 that the roads made by it in the Udhampur district proved of great use to public as they opened up various villages where previously no roads existed along which it was not possible to ride and where the main tracts were dangerous in places for foot travellers.30

In the road building history of the Kishtwar *tehsil*, 1899-1900 formed a very significant year. As it was this year that the construction of a road from
Simal to Desa was started and 11 miles of it was completed. But the main work was the construction of road from Kishtwar to Padar. Of the new road, about 30 miles were completed during 1899-1900 and the remaining work was completed in 1902-03. In the year 1909-1910, the Forest Department of the State made a narrow path of 7 miles and 3 in width in Reasi district of the Jammu region. This path was mostly used by the local residents of the area.31

Subsequently, the Forest Department established a web of some new roads in the entire Jammu region for the development of the State of Jammu and Kashmir. A new road linking the Gurkhan area to Brari area of Ramban was constructed by the Forest Department in 1939. The above mentioned road was 6.25 miles long. Five miles long road connecting Hammer Gali to Hingni Gali in Ramban was also established by the Forest Department. From Hammer area to Hum Gali in Ramban, one mile long road was constructed for connecting both the areas together.32

In Bhadarwah area of Jammu region, 0.48 miles long Kahra-Kewa road was made by the Forest Department for establishing connectivity between these two areas. Another 2.59 miles long road was erected from Thathri towards Dunadi which ran along the Kalnai Nala in Bhadarwah area. Another important road constructed in the Bhadarwah area was 3.90 miles long road running from Malhuthi towards Sekhi Gali.33

Some more significant roads were constructed by the Forest Department like in Billawar area about 4.60 miles long Kishenpur Palai road was established to lay connectivity in the area. Similarly, Budhi–Barwal road which was 5.10 miles long linked the area with the rest of the areas of the Jammu provision.34

All these roads and pathways facilitate trade and travel. These roads played an important role in unifying the State by bringing far flung areas closer
to main parts of the region. But at the same time the construction of these roads created ecological imbalances. Some roads resulted in submerging the fertile lands. The Saria – Nowshera road was a typical example.

3) **RAILWAYS**

It was an ambitious project undertaken by the Government of Jammu and Kashmir which connected other parts of British-ruled States of India to the princely State.

A railway line connecting Jammu with Sialkot in Punjab was laid down in 1890 with the British Indian Government bearing half of the expenditure. It was 25 miles in length and five feet and six inches in gauge, the line was laid with 60 lbs.

Nearly 10,000 passengers boarded the train for starting two days. It determines the popularity of railways among people during princely regime. The State had spent Rupees 9, 60, 000 on the construction of sixteen miles of this railway tract.

This railway service proved to be of great value as trade with Punjab was lifted. Almost whole trade between Jammu and Punjab was carried on by the Jammu Sialkot railway line. As the duration of the journey was reduced, so people prefer to travel through the railways.

The impact of railways on the ecology of the region resulted in feeling of timber for production of railway sleepers and railway fuel.

4) **BRIDGES:**

The construction and expansion of roads and other means of communication especially in mountainous region is impossible without bridges,
was the case with the Jammu region where the bridges played an important role in crossing various streams and rivers.

In 1907-08, a cantilever bridge was built over Tawi river in Rajouri as the previous bridge was washed away with floods. In 1930, the Assessment Commissioner recommended in the assessment Report of Akhnoor tehsil, an early construction of bridge over Chenab river in order to bring Budhal, Poonch, kotli, Rampur, Rajouri, Hamirpur- Sidhra and Nowshera closer to Jammu. Hence, two bridges were constructed, one over Chenab river at Akhnoor and other over Tawi river at Jammu at the cost of eight lakh rupees.35

There were number of other bridges in Jammu region. Important among them were Karai suspension bridge on Marwa river on Kishtwar Symthan Pass and suspension bridge over the Chenab at Doda.36

The bridge over the river Tawi in Rajouri was washed away in 1928. The reconstruction of this bridge was started in 1930. But again flood came and the material used for its construction was washed away so the work on it was not completed. The State Government sanctioned an amount of Rs.28, 000 and the work on it was started in 1937-38 and by that year only, it was completed.37

In 1939-40, the construction of Nail- Nallah bridge on the Mirpur Kotli road and bridge over Narsoo-Nallah on the Banihal Cart road was completed. The Beri-Pattan bridge on the fair weather road from Mirpur to Sudhnoti was also undertaken. In 1945-46, bridges in Akhnoor- Nowshera road, Mirpur- Rambari road and Dharamsal- Nowshera road were also constructed.38

In 1941, a bridge over the Mandi river at Kotli site in Chak-Katroh, a suspension bridge over Mahal Nallahin Bagh tehsil and another over the Suhran river at Samhote in Poonch was constructed by the Poonch authorities. The
Mahal Nallahin Bagh suspension bridge was badly needed as several lives were lost every year while crossing the river.\textsuperscript{39}

These bridges were built of wood on the cantilever system. Big beams were placed across the top of the piers which were built of massive trestles of \textit{Deodar} logs arranged in a square with their ends overlapping. The bases of the piers lied on the foundations of stones and piles driven in around. The upper end of each pier was cantilevered in such a way that the span was diminished. The ends of the bridge were attached by alternate courses of stones and wood.\textsuperscript{40}

Thus, from the above said, it appears that the timber was extensively used in the development of surface infrastructure of the region. Reckless cutting of hundreds of forest trees to meet the demands for railways, roads and bridges resulted in causing ecological problems.

**IRRIGATION**

Agriculture had remained the primary occupation of people of Jammu. As most of the agriculture land in Jammu region was dependent over rain water for good harvest, a necessity to devise a plan to provide irrigation to agricultural lands was realised. Low agriculture produce at populated areas at higher altitudes and hilly parts of the State was another reason which compelled the erstwhile princely regime to focus on agriculture production.

The Government decided to tap river waters for irrigation purpose in low lying fertile areas in Jammu, Samba, Kathua and Udhampur districts. These areas were just like plains of neighbouring State of Punjab as far as fertility of agricultural lands was concerned.

The Government decided to divert some waters from rivers and streams to meet the requirement of agriculture. This not only boosted agriculture production
but also increased green cover in the State. Population in many low-lying arid areas, which used to experience drought like situations during summers, had a respite after canals water started flowing through their areas. This in turn helped to stop movement of men and cattle towards rivers during summers.

Many initiatives were taken by the then State Government to construct channels to meet irrigational requirement of farmers in the low-lying areas of Jammu.

**Basantar Canal**

The work on this canal was started in 1914-15 and it was estimated that this canal would irrigate an area of 7,427 acres. But this would not be brought in action as under an agreement with the Punjab Government some cubic of water was taken by Punjab Government which made the river porous and stony, thus, absorbed a large percentage of water. This canal takes off from the right bank of the river Ravi about three miles above the Madhopur head works (Kathua) and had a total length of 13 miles.\(^{41}\)

**Jogi Gate Canal**

It was a minor canal constructed before 1900 by Public Works Department. Taking off from the right bank of Tawi river near Jammu city, it irrigated some lands near Jammu city and supplied water to the State gardens. It was only five and a half miles long with a bed width of four feet and a discharge of 10 cusecs.\(^{42}\)

**Old Rajpura Canal**

To bring down the water from the river Chenab, the construction of old Rajpura canal was started. This was taken out of the river from a point opposite Rajpura village. This was dug as far down as Hazoori Bagh (Maharaja Sahib’s
garden) about three miles from Jammu on Akhnoor road, and a number of aqueducts, and other masonry works were also built here and there. After a large amount of money spent on it and the work had been far advanced, it had to be given up as it has been said that the failure was due to the defect of leveling. The water was let into the canal but was never seen in regular flow. This canal serves no other object than that of adding to the list of old monuments of the State.\(^{43}\)

**Pratap Canal**

This canal derives its name after the Maharaja Pratap Singh who was instrumental in the construction of the canal. It took off from the right bank of the Chenab river. It was originally excavated in 1873, but was ruined by floods in the main river Chenab. It was remodeled in 1904-05. It was 24.15 miles in length. It irrigated 15,000 acres of land.\(^{44}\)

**Ranbir Canal**

Ranbir canal was named after Maharaja Ranbir Singh. Ranbir canal was the largest and the most important canal in the Jammu region. The construction of this canal was started in 1903 and spread to 1908. Taking off from the left bank of the Chenab near Akhnoor and following for the first four-and-a-half miles in the line of the old Shahi canal it flows for 39 miles in the main channel and 212 miles in the distributaries and was capable of commanding an area of 108,000 acres. Besides serving as an irrigation channel for 16 miles, propelling the turbines of the Jammu hydro-electric installation which supply electricity for lightening the city of Jammu city, running the water works department’s purifying plant, driving the looms of the Sericulture Department and mills of the city, the canal had ameliorated the condition of the rural population of the Jammu district and had proved a great productive work bringing a fair revenue to the State.\(^{45}\)
Satwari Canal

This was very small canal. It was built in 1890-91. It irrigated the land near Satwari Cantonment.\textsuperscript{46} It was generally used by the people for domestic purposes like washing clothes, utensils etc.

Ujh Canal

Its construction started in 1915 and was completed in 1923. It takes from the river Ujh. The extension work on Ujh canal was started in 1924 and it took nine years to complete. It served an area of 2,167 acres in 1930, 3,268 acres in 1940 and 3,611 acres in 1943 of land in the Jasmergarh tehsil of the Kathua district.\textsuperscript{47}

Upper Jhelum canal distributaries

These were eight in number and 15 miles in length. It took off from the upper Jhelum canal. These distributaries irrigated 1,149 acres of land.\textsuperscript{48} This canal was constructed at a cost of one lack rupees. It was expected that this canal would irrigate about 7,600 acres of area of Bhimber and Mirpur tehsils but due to seepage from the Upper Jhelum canal very little irrigation was received.\textsuperscript{49}

The construction of these irrigational canals in Jammu region also affected the ecology. There are several records which show that forest land was acquired by the Irrigation Department for expansion of the canals. For instance, in 1920, Forest Department transferred 297.56 acres of land to Irrigation Department for the extension of distributor No.9 of Ranbir canal.\textsuperscript{50} Although it proved boon to the people of the region as the availability of water attracted living beings, including man and wildlife, to find habitat close to canals.
SERICULTURE

The silk of the State was world famous from ancient times. But the silk industry was in the stage of disappearance due to political turbulences under the Afghan and Sikh rulers in Kashmir. It was Dogra regime which revived this industry once again. The Sericulture Department was established in 1897 under the directorship of Mr. C.B. Walton. The Silk Industry was established for the first time in State in Srinagar in 1907 and in Jammu in 1909. The Silk Industry was controlled and financed by the State. The Silk Industry not only provided permanent employment and subsidiary occupation for many thousands of agriculturists throughout the State but also brings revenue to the State exchequer. 51

Under Dogra regime the silk of the State was in much demand in Europe especially in Britain and France during world war second for manufacturing parachute. Therefore, raw silk was exported to Britain and France. The crown of England awarded ‘Gold Medal’ to the silk factory of Jammu for the commendable services rendered by it to fill the demand of raw silk during the war period. 52

The Sericulture Department continued its efforts to expand the sericulture industry. The Sericulture Department imported silkworm eggs from Italy and France and distributed among zamindars of Jammu region. The zamindars brought back with them the cocoons to the silk factory at Jammu and the rearers were paid their dues after weightment. Similarly, Sericulture Department distributed about thousands of mulberry seedlings from the Government nurseries to the zamindars to plant mulberry trees on their holding. 53 The zamindars planted these mulberry trees for their own interests, being the most economical and effective way of propagating the growth of the tree. 54.
To promote more production of silk, the State encouraged the people by providing various incentives. For instance, if a person was desirous to get the State waste land for plantation of mulberry tree, he had to present his petition before the governor or the settlement officer, for tehsils. The land was given free of rent for mulberry plantation to the applier.  

As the cultivation of this plant was economic in nature so the State Government took effective measures for the protection of existing mulberry trees and the plantation of new ones throughout the State territories. For example, cutting of green mulberry trees without proper authority was strictly prohibited.

During that period, people generally had backyard where trees were grown. One of the components of social forestry which was easiest to implement was the backyard planting. Being economic in character, many people preferred to plant mulberry trees instead of other trees like Neem, Babul which were commonly found in the backyards.

**RESIN TAPPING**

The crude resin was trapped in the forests of Jammu region since 1911. However, the extraction of resin on large scale was first started in 1938. And in 1940, Resin and Turpentine factory was established in Miran Sahib, Jammu. The resin was annually sold to resin factory at Miran Sahib, Jammu and Jallo turpentine in Punjab. By exporting resin to Punjab, State Government earned large revenue. This industry was essentially a subsidiary occupation for the local rural population. The Miran Sahib factory led to the establishment of a number of private owned industries. These private owned industries produced soap, phenol, varnish, paints etc. This factory led to the establishment of a number of minor private owned industries and contributed to the development of Miran Sahib into a new industrial town.
Besides resin, gum was another minor forest product which was extracted from forest trees and sold to State Stationary Department.\textsuperscript{62} It was observed that women of villages often use to go to forests in the evening to collect resin and gum as they were hired by the contractors on daily wages. While collecting, they usually collected firewood and grass as it was the only source of the cooking during that time. While collecting fuel wood, people use to break the branches of green trees and later use to collect as dry branches.\textsuperscript{63}

**HYDRO-ELECTRIC INSTALLATIONS**

The princely State tried to tap river waters to generate electricity by installing hydro-power generation stations. It was considered to be the cheapest way to generate electricity, which could be used to run water pumping station, enabling telegraph system, etc.

It was during the era of Maharaja Partap Singh when hydro-electric installations were first used, and that too for lighting streets and palaces. Jammu Hydro Electric Installation on Ranbir Canal catered to the major needs.

As per annual administrative report of 1945-46, owing to unprecedented fall in the level of water in the Ranbir canal due to drought the Diesel Oil Engine had to run for about 2,529 hours against 1,666 hrs of the previous year. The total number of units generated from the Hydro-Electric plant and the Diesel Oil plant was 35, 81, 354 against 41, 45, 450 of the previous year. The transformers and switch gear in 26 sub-stations, HT, LT, telephone and service lines were maintained in order. Three new sub-stations were constructed. Additional transformers were erected in some of the transformer stations to enable the increased load on the stations to be carried properly. Total number of lightening and power installations was 7,018 against 6,710 of the previous year.
Although it helped in lighting the city of Jammu but at the same time it affected the ecology of the nearby area. The creation of hydro electric installation affected the aquatic ecosystem because of the reduction of surface water. Though, we did not see any record mentioning the migration of people due to creation of hydro electric installation, but it might be possible that it led to displacement of natives of the areas.

**TELEGRAPH & WIRELESS NETWORK**

Modes of communication hold key to the strategic importance during peace and war times. Communication network always provides an edge and ensure the fastest always first. Although, the first step to introduce telegraph services in the State was taken before 1885 from Srinagar to Gilgit and Srinagar to Jammu. During Maharaja Pratap Singh’s period, the telegraphic and telephonic lines which are mentioned below were expanded almost in the whole of the territory:

In 1915-16, the telephone lines in Jammu were thoroughly repaired. In 1921-22, pair of phone pore telephones was purchased from America which made simultaneous telegraph and telephone work possible on the same wire and proved a great success. In Jammu region wireless stations were opened at Jammu and Naushera, Mirpur, Kotli, Bhimber and Rajouri in 1930-34. By the construction of a trunk line between Srinagar and Jammu on 28th April, 1932 which was linked up with British India, the telephonic service had been greatly improved. From 17th of October 1940 underground cable was laid in Jammu to meet the demand for telephone connections. Finally in 1942-1943, the line mileage was 1048.100 km and the wire mileage was 1395 km.
The telegraphic and telephone wires were tied with wooden poles. With the improvement in the telegraphic and telephone services, the demand of wooden poles increased which was fulfilled by Forest Department. Apart from other demands the Forest Department also had to fulfill this demand. Thus, once again forests became victim and more trees were cut down to provide poles to the Power Works Department.

**MINING**

The economic development of any State also depends upon the availability of mineral resources. The Jammu region is fairly blessed and rich in its potential deposit of mineral wealth. There are records of earlier mineral explorations in the State, but a systematic survey of its mineral resources was undertaken during Maharaja Partap Singh from 1917, when Mineral Department was set up for the first time for proper development.

Geological surveys were conducted by Jammu and Kashmir State from time to time. Gypsum deposits at Bambyar and Silver-Lead deposits at Bunyar were examined in 1937-38. There was Salal Bauxite deposits in Jammu region. The Sapphire mines operations were carried out elaborately during 1937-38 under the directions of Mr. Marin, a French geologist and mining engineer. The total footage done was 800 ft in 12 weeks at an elevation of 15,500 ft. The work at the new mines was more vigorous in the year 1937-38. Similar surveys were done on the exploration of different minerals found in the region.

Dogra rulers left no stone unturned in promoting the State mineral. The Mining Department participated in various exhibition held in British India. Similarly, the State Government also encouraged indigenous goods by holding industrial exhibitions in the State (since 1929).
Below given table gives the list of minerals found in different areas of Jammu region:

<table>
<thead>
<tr>
<th>Mineral</th>
<th>Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coal</td>
<td>Reasi, Jangalgali, Kalakote, Sangar Marg, Ladha</td>
</tr>
<tr>
<td>Stealite</td>
<td>Reasi</td>
</tr>
<tr>
<td>Copper</td>
<td>Reasi</td>
</tr>
<tr>
<td>Saphire</td>
<td>Padar</td>
</tr>
<tr>
<td>Iron ore</td>
<td>Matah &amp; Kandi</td>
</tr>
<tr>
<td>Zinc</td>
<td>Reasi</td>
</tr>
<tr>
<td>Nickel</td>
<td>Padar, Reasi, Ramsu</td>
</tr>
<tr>
<td>Slate</td>
<td>Banihal</td>
</tr>
<tr>
<td>Fuller’s earth</td>
<td>Bhimber</td>
</tr>
<tr>
<td>Possible Petroleum</td>
<td>Nar Budhan, Ramnagar</td>
</tr>
</tbody>
</table>

Although exploration of minerals and fuel helped the State Government to earn considerable income by charging on exploring and mining licenses but at the same time it led to the environmental problems. In the process of clearing the vegetation to give way to quarries, very valuable forests were cut down which led to great loss and the wild animals of that areas also got disturbed. Similarly roads...
were built up to the mining sites which also affected the vegetation and forests. To construct the mining sites valuable top soil was also cleared down which led to the loss of valuable land for all times to come.

**BRICK-KILNS INDUSTRY**

Bricks are very important material for building purposes. Brick making is traditional industry of the State although it was unorganized. Good fertile alluvium soil was available in the region to make brick kiln. Moreover, rich forests helped in providing wood required for burning bricks.

Any person desirous of setting up a brick kiln for building material had to submit an application on plain paper to the territorial tehsildar. In every tehsil, a register was maintained in which the names of license-holders and the places where brick kilns were set up. The building material like local pacca bricks, bricks, lime stone, lime, concrete of all kinds etc were manufactured only after payment of royalty to the State. Before giving license to the kiln, the tehsildar or naib of the tehsil inspect the kiln. The tehsildar or naib after inspecting assessed the royalty to be paid by the owner of the kiln to the State. The building material made for the purpose of Government and for the purposes of religious endowments, such as mosques, temples, inns, tanks, wells, boalies and irrigation wells were exempted from the payment of royalty.

Unfortunately, we don’t have any record which shows the number of brick kiln existed in the region. But on the basis of oral sources, we can say that there were few brick kilns in the region on Kathua- Jammu- Akhnoor road. Every day, number of lorries, tongas carried firewood went from the nearby forests to these kilns to meet their demand of charcoal. Besides, causing pollution which was negligible at that time it also destroyed forests.
FURNITURE INDUSTRY

Apart from other forest based industry, there was another important industry called Furniture Industry in the State. The carpenter of the State were skilled in the manufacturing the furniture of different shapes. The carpenters of Jammu region were famous for making beautiful furniture, toys, ceilings and doors of houses, shrines or temples of Shisham wood. There was great demand of such articles in the region which led to the establishment of about fifty units producing furniture and other allied articles. In order to bring perfection in the wood industry, the State Government started providing training to the carpenters in the Amar Technical Institute, Srinagar.

EXPLOITATION OF GREEN WEALTH

Slopes of hills and mountains in Jammu region were always covered by thick forest, chiefly comprising Deodar and Pine trees. Timber from conifers, fuel wood from broad-leaved species of trees and minor forest products like resin, medicinal plants and herbs were abundant in the forests of Jammu region. Apart from agriculture, forests also yielded substantial annual revenue and played a key role in infrastructure development in the State.

The forests also played a major role in preservation of ecology and environment in the region as they absorb water and reduce its flow, thus regulating rainfall, it prevented soil erosion. The erstwhile Government had established paper pulp factory on the bank of Chenab River in Jammu region. With the establishment of paper pulp factory, the exploitation of Fir forests started because Fir tree was admirably suited for the manufacture of paper pulp.

Previously, half wroughts for service rifle butts were manufactured entirely from Walnut. But during the period under study, various broad-leaved species such as Birdcherry and maple had been used. Similarly, with the
advances in Indian industries, the fir timber apart from timber of *Deodar, Chir* and Pine had become important. Owing to the increase war demand, the demands of Fir timber with the timber of other trees were also expanded. Thus, in anticipation of the increased demand of Fir, a new Fir Working plan was started to bring these forests under regular working plans.\(^{71}\)

Great damage was also done to the State forests by the cutting of torch-wood from the base of green Pine trees by the villagers. Extensive use of Pine or *Deodar* as firewood by locals also affected forests at large scale.\(^{72}\)

Moreover, extensive cutting of trees for infrastructure development like construction of roads and railway lines and building housing structure destroyed much of the forests which resulted in landslides, soil erosion and floods, and also affected the ecology. Timber from Jammu and Kashmir State forests were exported in large scale to meet the growing demand for making of railway sleepers to expand railway lines in British India, as well as in State. The demand of *Deodar* timber of the State increased in 1880’s in British India because of the establishment of new rail line in North West from Lahore to Peshawar on the North West Frontier and the Lahore- Karachi railway designed primarily for the export of Punjabi wheat to Europe.\(^{73}\)

As per administrative reports of Forest Department in the year 1907, the total timber removed by all sources and under all agencies in Chenab Division was 1, 27,707 cubic feet which was decreased to 80,187 cubic feet in the year 1908.\(^{74}\) The figure comes to 51,369 cubic feet in 1910 from 76,615 cubic feet in 1909.\(^{75}\) The Chenab Division recorded the removal of 38,804 cubic feet timber in 1911 and 82,079 cubic feet in 1912.\(^{76}\) In the year 1914, a rapid growth in the removal of timber from Chenab Division was recorded with 1, 05,405 cubic feet as compared to the previous year in which the data recorded was 76,443 cubic feet. The increase was due to the fact that instead of one contractor, three were
employed and some sawing work was done amongst the old timber lying distant from the water ways of the river.\textsuperscript{77}

Similarly, in Kishtwar division, the removal of Timber from all sources including Government agencies was 21,96,268 cubic feet in the year 1907 and this figure rose to 22,58,788 cubic feet in the year 1908.\textsuperscript{78} The data increases from 32, 54,485 cubic feet in 1909 to 36, 49,922 cubic feet in the year 1910.\textsuperscript{79} The timber removed from Kishtwar division in 1911 was 19, 22,855 cubic feet which was further decreased to 17, 30,050 cubic feet in 1912.\textsuperscript{80} Kishtwar division recorded rapid decrease in removal of the timber when in 1913, 1,533,903 cubic feet timber was removed and this number fell down to 1,480,601 cubic feet in 1914.\textsuperscript{81} In 1920, the area recorded a total of 17, 08,735 cubic feet of timber was removed and the figure came to 15, 62,847 cubic feet in 1921.\textsuperscript{82}

So far as Riasi division of Jammu region was concerned, the total timber removed in this area was 1, 66,373 cubic feet in the year 1907 which dropped to 41,939 cubic feet in 1908.\textsuperscript{83} The decrease was due to the increasing number of unauthorized felling cases and the rapid drastrous fire occurred in Reasi division. The situation was similar in Ramnagar division where the figure was 3, 10,649 cubic feet in 1907 which came down to 44,077 cubic feet in 1908.\textsuperscript{84} The total area burnt due to forest fire was 10,955 acres in Ramnagar. In the year 1909, the timber removed from Riasi division was 4, 70, 727 and this number increased to 5, 59,826 cubic feet in 1910.\textsuperscript{85} But the position was not same in Ramnagar division where the figure dropped from 4, 35,315 cubic feet in 1909 to 3, 46,410 cubic feet in the year 1910.\textsuperscript{86}

The total timber removed from Riasi division in 1911 was 3, 34,806 cubic feet which rose to 3, 70,793 cubic feet in 1912.\textsuperscript{87} But in 1914 a decrease in the figure was recorded with 2, 76,527 cubic feet as compared to the 4, 07,909 cubic feet recorded in 1913.\textsuperscript{88} A rapid growth in the removal of timber was recorded in
Ramnagar division where the figure raised to 1, 97,471 cubic feet in 1912 from 1, 34,170 cubic feet in 1912.\(^8^9\) In the year 1921, Riasi recorded the removal of timber from the area by 7, 58,799 cubic feet which was 10, 20,186 cubic feet in 1920.\(^9^0\)

Likewise, in Bhimber division, the removal of timber was increased from 3, 67,272 cubic feet in 1907 to 3, 97,072 cubic feet in the year 1908. But the situation was not the same in Jasrota division where the removal of timber from all sources decreased from 2, 53,774 cubic feet in 1908 from 2, 94,868 cubic feet in 1907.\(^9^1\) This figure further decreased from 2, 60,454 cubic feet in 1909 to 72,495 cubic feet in 1910.\(^9^2\) The year 1912 witnessed growth in this number when it reaches to 39,305 cubic feet from 38,391 cubic feet in 1911.\(^9^3\)

The position was same in Mirpur division of Jammu region where the total timber removed from the area was 4, 88,470 cubic feet in 1909 which came down to 3, 42,674 cubic feet in 1910.\(^9^4\) In 1912, a further decrease in the number was observed when the removal of timber in the area came to 3, 72,580 cubic feet in 1912 from 4, 55,258 cubic feet in 1911.\(^9^5\) After continuous decrease, Mirpur division recorded some increases in the figure in 1914 with 4, 09,248 cubic feet against 2, 35,534 cubic feet recorded in 1913.\(^9^6\) In 1921, Mirpur division recorded a rapid decrease in this figure when the data reached to 47, 174 cubic feet as against 3, 63,369 cubic feet which was recorded in 1920.\(^9^7\)

The above said figures show that every year lakhs of trees were cut down from the rich forests to meet the increasing demand of the State and its people.

Thus, from the above stated text, it is clear that tree were exploited carelessly without knowing the fortune prospect. The exploitation of green wealth in any ways affects the ecology of the region.
TANNERY INDUSTRY

The State Government had started Government cottage tannery and school where son of hereditary tanners were taught improved methods of tanning. Theoretical classes were held in such subjects as flying, drying, selection of raw hides and skins liming and other aspects of the tanning industry. The tannery at Jammu continued to produce articles of good quality. The receipts from sales of hide and skin in the year 1905-06 amounted to nearly rupees 2,76,485 where as in the year 1920-21, the value of hides and skin exported to Punjab was 94,223 rupees. The receipts from sales in year 1926 amounted to nearly rupees 31,000. Thus, the State Government encouraged tannery industry by financing it to earn revenue. However, for producing tannery products the skin of dead animals were used as per law, but for increasing their income, people used to do illegal hunting and poaching which led to great threat to wild animals.

HUNTING FOR GAME PURPOSE

As the State was famous for wild animals, every year several visitors came in the State for hunting. Hunting was allowed to the license-holders only on payment of fixed fee. Soon, the State realized the danger of extinct of animals in time and in consultation with sportsmen of experience, the erstwhile State Government set rules under title Jammu & Kashmir Game Laws Notification. Under this notification, only fixed number of animals and birds were allowed to hunt and that too on fixed months. Thus, Game Laws Notification put a stop on reckless killing of animals and birds by sportsmen. Since then, wild animals of all kinds were preserved under the guardianship of a State Department known as the Game Preservation Department which employed efficient and trained watchers in all game areas which protect game against poachers.
There were several game reserves in this province namely Thanoa, Kotli, Nehranal, Jiganu, Dalsar, Gurah, Bahu, Bhadyal, Makwal and Agrachak. These game reserves were rich in fauna wealth. The total area of game reserves in Jammu region was 2,282 sq miles.

The Government had also imposed ban on fishing because of sacred nature of some places and under no circumstances it was permitted. The State prohibited the use of dynamite or any other explosive substance for the purpose of catching or destroying fish in the Tawi river. Anyone found using any explosive substance for catching fish was punished under section 143 of Ranbir Dand Bidhi.

Extensive cutting of trees for infrastructure development and building housing structures also destroyed natural habitat of several animals and birds. For instance, *Nilgai* was found only in forests of the region, but due to modernization phase started in the region during the period of study, the natural habitat of this wild animal was disturbed. These *Nilgai* frequently started visiting the fields of cultivators and destroyed their crops. It might be possible that it was because of this destruction caused by *Nilgai* to the crops the State council on 8th October, 1924 in a special meeting held at Gupkar, Srinagar, directed that *Nilgai* would not be considered sacred in future and could be destroyed if found outside the *rakhs*. However, this order was not put in practice because of numerous telegraphs and protest by Hindu Sabha, Mahajan Sabha, Brahman Sabha and from different societies as the killing was considered to be against hindu sentiments and these *Nilgai* were regarded as sacred animals from a long time in past. Maharaja Pratap Singh who was ruling over the State himself was against this order, he put a stop on the order at once he came to know about this. However, an opinion was sought on this issue from Bharat Dharam Maha Mandal, Benaras whether *Nilgai* would be considered as sacred as cow and
whether it was necessary to protect and feed this *Nilgai* as cow. Unfortunately, no reply was received by His Highness from Benaras.\(^\text{104}\)

As stated above, during the period of our study, the State witnessed fast infrastructure development to meet the growing requirement of State which generated new sources of income and brought modernization in the State. However, this modernization was brought at the cost of affecting rich flora and fauna of the region. Such modernization been discussed below in detail.

Establishment of institutions of academic as well as professional excellence, medical facilities, trade centres increased influx of people visiting towns of Jammu province. For instance, Prince of Wales College, Jammu (now GGM Science College), established by Maharaja Partap Singh, catered to higher educational needs of people of Jammu region, Shri Maharaja Gulab Singh Hospital, Shalimar Chowk, Jammu, used to meet their healthcare needs. The better road infrastructure reduced the distances and enabled people to reach far off places to fulfill their needs.

However, all these infrastructural developments were based on forests/agricultural lands and forest products (i.e. timber). In order to provide assistance in manufacturing of goods in the State, and industrial museum and sales emporium was opened at Jammu. Sericulture industry, Woolen industry and Apiculture industry were established during the period under study.

To devote increasing attention to the development of forests, minerals and industrial resources of the State, a new portfolio of Commerce and Industries was provided in the constitution which came into force in 1922 A.D.\(^\text{105}\) The establishment of the portfolio resulted in the creation of a new Department of Industries in 1923.
With the establishment of Industrial Department scientific exploitation of forest resources was started. The Industrial Department started examining the possibilities for the establishment of new industries. Thus, resin and turpine factory in Miran Sahib was established, a sugar mills was also set up in R. S Pura and oil mills were set up in Jammu. While setting up of new industries opened new vistas of employment for locals, it also opened up new avenues to augment finances for the State Government. This department succeeded in spreading an industrial atmosphere in the State and created a passion among the natives to take to industrial pursuits.\textsuperscript{106}

The industrial utility of various minor forest products were also examined. Experiments were conducted on various minerals in the Government Industrial Laboratory and certain manufacturing firms of Britain.\textsuperscript{107}

During the period under study, the State witnessed fast infrastructure development to meet the growing requirement of State and generate new sources of income.

Modernization in the State as such was primarily based on natural resources and had mixed impact on its ecology. For instance, \textit{Chir} tree was given special attention and more and more \textit{Chir} saplings were planted. These \textit{Chir} trees were exploited recklessly without knowing the fate in future. The method of extracting resin during Dogra rulers was traditional as resin was tapped by making a cut which exposed the surface of the wood. The depth of blade was very deep which resulted in destruction of water conducting tissue which in turn led to the death of tree. Thus, the trees died untimely death. The traditional method was faulty and unsafe for pine and fir trees as resin was mainly extracted from these trees. Thus, the \textit{Chir} and pine trees were exploited recklessly for commercial purposes without knowing the fate in future. Along with its effects on green wealth, it also affected the ecology of the Jammu region.\textsuperscript{108}
Under Maharaja Pratap Singh, special emphasis was laid on expanding land transport network and investment towards modernization of the State, thus the isolation of the different parts of country was broken and villages were brought into closer contact with the towns and cities. The rail-road connectivity enabled State to mobilize aid to the calamity affected areas in faster way, thus helped in reducing up to larger extent damages to life and property during droughts and famines. It was due to these developments only, the standard of living of the people of Jammu also improved economically.

The transport facilities encourage trade and boosted agriculture as well. With the opening of Banihal Cart road and Jammu Sailkot railway line, Jammu became the centre of trade hub because the entire trade from Sailkot to Kashmir was passed through Jammu. The extension of railway line up to Jammu gave a fillip to the trade activities by facilitating the trades of both private and public sectors. Extension in the road length has brought many areas within the approach of the traders and people of these areas had benefitted to considerable extent. The growth in trade from 1920-21, 1930-31, 1940-41 with the rest of India is shown in the table below:

Table showing Import of goods to Jammu from India

<table>
<thead>
<tr>
<th>Year</th>
<th>Maunds</th>
<th>Rupees</th>
</tr>
</thead>
<tbody>
<tr>
<td>1920-21</td>
<td>11,31,061</td>
<td>17363761</td>
</tr>
<tr>
<td>1930-31</td>
<td>13,09,255</td>
<td>-</td>
</tr>
<tr>
<td>1940-41</td>
<td>19,90,213</td>
<td>2,0909315</td>
</tr>
</tbody>
</table>

The above table shows the growth of trade in Jammu region. The import in the year 1920-21 was 11, 31,061 maunds. In 1930-31 and in 1940-41, the import
increased from rupees 13, 09,255 to rupees 19, 90, 213 respectively. The chief article of import were grains, pulses, salts, drugs, species, leather, oils, petroleum, dyeing materials, medicines, tobacco, vegetables and other articles of merchandise.\textsuperscript{110}

The export of goods to India also increased from 13, 35, 688 maunds in 1920-21 to 6, 91, 101 maunds in 1940-41. The total value of goods exported in 1920-21 was rupees 76, 35, 676 and in 1940-41 was rupees 40, 69, 342. The chief articles exported from Jammu to India were hides and skins, raw silk, drugs, cocoons, wool and woollens, grains and pulses, timber, livestock etc.\textsuperscript{111}

Table showing Export of goods from Jammu to India

<table>
<thead>
<tr>
<th>Year</th>
<th>Maunds</th>
<th>Rupees</th>
</tr>
</thead>
<tbody>
<tr>
<td>1920-21</td>
<td>13,35,688</td>
<td>76,35,676</td>
</tr>
<tr>
<td>1930-31</td>
<td>16,47,874</td>
<td>-</td>
</tr>
<tr>
<td>1940-41</td>
<td>6,91,101</td>
<td>40,69,342</td>
</tr>
</tbody>
</table>

The roads connectivity also helped in boasting inter provincial trade i.e. between Jammu and Kashmir which was carried via Banihal and Shopiyan. The main articles of import from Jammu to Kashmir were wool, grains, pulses and manufactured cotton. However, vegetables, woollens, fruits formed the main articles of export from Kashmir to Jammu. Unfortunately, we have only few years figure to show the development of the inter-provisional trade from 1905 to 1925. In the year 1905, Kashmir imported commodities of 6345 maunds of total value of rupees 2, 24, 916. In the next year the quantities of the products increased to 6549 maunds, with this the value also increased to rupees 11, 72, 091. The rise in quantity and value was marked by inclusion in the figures of the value of treasure which was rupees 92,000.\textsuperscript{112}

In 1907-08, the import decline to rupees 2, 81, 666 where as in 1908-09, the import increased both in quantity and value to 4904 maunds and 3, 40, 988 rupees. In
1909-10, imports declined both in value and volume on account of lesser imports of articles. From 1910-11, there was declined in imports to Kashmir from Jammu but from 1919-20 there was increment in import.

The table given below reveals the total value and volume of the imports to Kashmir from Jammu:

<table>
<thead>
<tr>
<th>Year</th>
<th>Quantity in Maunds</th>
<th>Value in Rupees</th>
</tr>
</thead>
<tbody>
<tr>
<td>1905-06</td>
<td>6345</td>
<td>224916</td>
</tr>
<tr>
<td>1906-07</td>
<td>6549</td>
<td>1172091</td>
</tr>
<tr>
<td>1907-08</td>
<td>4218</td>
<td>281666</td>
</tr>
<tr>
<td>1908-09</td>
<td>4904</td>
<td>340988</td>
</tr>
<tr>
<td>1909-10</td>
<td>4161</td>
<td>275140</td>
</tr>
<tr>
<td>1910-11</td>
<td>2270</td>
<td>110251</td>
</tr>
<tr>
<td>1911-12</td>
<td>1891</td>
<td>2,12,107</td>
</tr>
<tr>
<td>1912-13</td>
<td>3530</td>
<td>68,696</td>
</tr>
<tr>
<td>1913-14</td>
<td>4938</td>
<td>70,824</td>
</tr>
<tr>
<td>1914-15</td>
<td>1028</td>
<td>20,005</td>
</tr>
<tr>
<td>1915-16</td>
<td>664</td>
<td>14,419</td>
</tr>
<tr>
<td>1916-17</td>
<td>619</td>
<td>11,578</td>
</tr>
<tr>
<td>1917-18</td>
<td>120</td>
<td>13,091</td>
</tr>
<tr>
<td>1918-19</td>
<td>216</td>
<td>6205</td>
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<tr>
<td>1919-20</td>
<td>415</td>
<td>17,540</td>
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<tr>
<td>1920-21</td>
<td>965</td>
<td>25,242</td>
</tr>
<tr>
<td>1921-22</td>
<td>1175</td>
<td>19,213</td>
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<tr>
<td>1922-23</td>
<td>501</td>
<td>4544</td>
</tr>
<tr>
<td>1923-24</td>
<td>89</td>
<td>4864</td>
</tr>
<tr>
<td>1924-25</td>
<td>147</td>
<td>2930</td>
</tr>
</tbody>
</table>
Exports from Kashmir to Jammu increased both in value and volume with the opening of Banihal Cart road. From the year 1905-06 to 1907-08 the trade increased especially in 1906-07. The abnormal rise in value was marked by inclusion in the figures of the value of treasure which was Rs 92,000. But in the year 1908-09, trade declined because of the occurrence of plague in the region which restricted the influx of Kashmiris and thereby affected the trade. Some minor improvements were seen in the exports to Jammu from Kashmir in 1913-14, 1924-25 and 1925-26. The table shows the volume and value of exports from Kashmir to Jammu.\textsuperscript{114}

<table>
<thead>
<tr>
<th>Year</th>
<th>Volume in Maunds</th>
<th>Value in Rupees</th>
</tr>
</thead>
<tbody>
<tr>
<td>1905-06</td>
<td>7850</td>
<td>202749</td>
</tr>
<tr>
<td>1906-07</td>
<td>8188</td>
<td>295136</td>
</tr>
<tr>
<td>1907-08</td>
<td>15082</td>
<td>226200</td>
</tr>
<tr>
<td>1908-09</td>
<td>24371</td>
<td>335112</td>
</tr>
<tr>
<td>1909-10</td>
<td>16751</td>
<td>219215</td>
</tr>
<tr>
<td>1910-11</td>
<td>21504</td>
<td>298957</td>
</tr>
<tr>
<td>1911-12</td>
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<td>1912-13</td>
<td>4163</td>
<td>81892</td>
</tr>
<tr>
<td>1913-14</td>
<td>19450</td>
<td>204028</td>
</tr>
<tr>
<td>1914-15</td>
<td>7353</td>
<td>60082</td>
</tr>
<tr>
<td>1915-16</td>
<td>6748</td>
<td>64441</td>
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<tr>
<td>1916-17</td>
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<td>50279</td>
</tr>
<tr>
<td>1917-18</td>
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<td>57365</td>
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<tr>
<td>1918-19</td>
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<td>26320</td>
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<td>1919-20</td>
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<td>7642</td>
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<tr>
<td>1921-22</td>
<td>7642</td>
<td>704008</td>
</tr>
<tr>
<td>1922-23</td>
<td>5434</td>
<td>35593</td>
</tr>
<tr>
<td>1923-24</td>
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<td>17863</td>
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While the exploration of mineral wealth necessitated development of road infrastructure, the latter also contributed in development of former. It was due to these developments only, the standard of living of the people of Jammu also improved economically and socially.

At the same time the road-rail connectivity greatly possess threat to many wildlife species as it act as barriers to the movement of animals and led to habitat fragmentation because many species did not cross the open space created by roads due to the threat of predation who were always in search of wild animals for their furs, feathers, skins and horns.

The increase in the demand of electricity usage necessitated erection of power generation stations, distribution grids and poles. For establishing them, many trees were cut down and large size of agricultural land was left unused. Lose live electricity wires also posed greater threat to avain lives and many times caused accidents.

Similarly with telegraph system began a new era of speedy communication in the history of Jammu. Communication, which plays an important role in peace as well as war time, being fast it helped State government to take decisions faster to meet the emergency needs during natural calamities and other disasters. Mobilization of rescue teams during emergency situation was made easier by the telegraph and wire network. But at the same time establishing telegraph and wire network also had some negative impact on trees and vegetation. However, it may not be considered as devastating because most of wiring was done along with roads due to its security and safety reasons.

The development of roads and transport system in the State led to the development of industries in the State. No doubt, it was mining industry which gave fillip to the State exchequer. It was during the period of study when princely
Government gave mining a serious thought and in association with British India, improvised it to increase production. At that time there was no such concept of environment-friendliness while mining. Focus used to remain on production of minerals. Although it gave positive financial outcome, yet the ecology in the State was disturbed extensively.

Nature takes thousands of years to produce few centimeters of fertile top soil. For mining, surface cover and vegetation were removed which led to the loss of valuable land. The mining also affects underground water by lowering of the water table. Mining activities, like quarrying, also caused air pollution which is detrimental to the health of human beings as well as animals. Besides this, blasting to explore minerals weakens the mountains and results in landslides. Although these symptoms of ecological crises were not seen at that time but we can say that whatever ecological problems we are facing today have its root cause in the period of study.

The State earned considerable revenue by issuing licenses for extracting mineral wealth through Mining Department. Being a source of revenue, special attention was paid to these minerals because of the threat of smuggling which were detected several times. For instance, a case of smuggling of Sapphire was detected in 1937-38. This shows that illegal exploration was done during that period which further led to ecological problems.

Similarly for running brick kilns, the trees were cut down in order to obtain wood required to burn bricks. This resulted in deforestation and infertility of soil in the nearby areas.

Likewise, canals were primarily constructed with an objective to reduce dependency of agriculturists on rain water. The water of various rivers was tapped and distributed in the agriculture lands through canals and distributaries.
It helped increase of agriculture produce in Jammu region by reducing dependency of farmers on rains and meeting their demand for better harvest.

Construction of canals on rivers also helped in reducing the impact of flash floods and thus, lowered the damages to life and property in the vicinity. Canals also helped in decreasing soil erosion and landslides due to floods.

Besides this, migration of people along with their livestock during scorching summers in the arid low lying areas of Jammu province also reduced with the canals bringing in water. Tribesmen, particularly Gujjars, who used to move along with their buffaloes to the river banks during summers, also had a sign of relief and confined their movement along the canals nearly towns and populated areas.

While there were many plus point, the only minus point was large scale removal of fertile cover of soil and cutting of vegetation for construction of canals. There were several records which show that cultivable land was acquired by Irrigation Department for construction of canals. For example, in the year 1920, 53.68 acres of land was sanctioned by the order of His Highness to the Irrigation Department for construction of distributor no.4, Ujh canal, Jasmirgarh, Jammu region.\footnote{116}

The extensive cutting of trees for infrastructure development and building housing structures destroyed much of the forests which resulted in landslides, soil erosion and floods and thus, affected the ecology of the region.

Large scale destruction of forests gave a fillip to the landslides as well as soil erosion from agricultural land. Though all of landslides did not cause major damage to the property, yet they played their role in affecting gradual change in regional geography.


15. *Census of India, 1931*, *op.cit*, p.34.


17. *Ibid*, p.44.
18  Chouhan, Amar Singh, *op.cit*, p. 45.
19  Census of India, 1931, *op.cit*, p.34.
20  Sooden, Surjit Singh, *op.cit* p.265.
21  Chouhan, Amar Singh, *op.cit*, p.44.
22  Census of India, 1931, *op.cit*, p.34.
23  *Ibid*, p.35.
26  Census of India, 1931, *op.cit*, p.35.
27  *Ibid*.
28  *Ibid*, p.44
31  *Progress report of forest administration in the Jammu and Kashmir State for the year 1909-10*, p.4.
33  *Ibid*.
34  *Ibid*.
35  Sooden, Surjit Singh, *op.cit*, p.266.
36  Census of India, 1931, *op.cit*, p.35.
38  Sooden, Surjit Singh, *op.cit*, pp.266, 267.
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41  *Census of India*, 1931, *op.cit*, p.28.


43  *Ibid*.


45  *Census of India*, 1931, *op.cit*, p.28.


49  *Census of India*, 1931, *op.cit*, p.28.


52  Sooden, Surjit Singh, *op.cit*, p.228.


60 Sooden, Surjit Singh, op.cit, p.237.


64 Kapoor, M.L, op.cit, p.326.


67 Sooden, Surjit Singh, op.cit, p.234.

68 Kapoor, M.L, op.cit, p.296.


72 Kapur, M.L, op.cit, p.265.
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103. F.No141/105-G of 1925, p.2. C.S/G.B.

104. F.No.56/1923, C.S/ P.B.

105. *Census of India, 1931, op.cit*, p.36.


