

Population Growth and Associated Problems: A Case Study Of Darjeeling Town

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ABSTRACT: A growth in population implies a change between two given points in time. The net change in population between two points in time is expressed in percentage and is described as the growth rate of population. Population growth takes place due to migration and natural increase, which if unchecked accounts for multifarious problems. These problems manifest themselves in development of slums, shortages of water supply, traffic congestion, problems of waste disposal, etc. This paper studies the growth of population in Darjeeling town and highlights the problems associated with it. It further attempts to evaluate the policies adopted by Darjeeling Municipality to solve such problems and suggest some remedial measures for it.

I. GEOGRAPHICAL ACCOUNT OF THE STUDY AREA

The District of Darjeeling lies between 26°31'N and 27°13'N latitude and between 87°59'E to 88°53'E longitude. The total area is about 3,149 sq.Kms. It is bounded on the north by Sikkim, in the south by Bangladesh, West Dinajpur, in the west by Nepal, Bihar and on the east by Bhutan and Jalpaiguri district. The hills cover 1/5th of the total area of Darjeeling district. In 1988, Darjeeling Gorkha Hill Council, an autonomous body to look after the interest of the hill people of the 3 sub-divisions has been established by the Central Government with the concurrence of the State government.

Darjeeling Town is situated on lower part of the Darjeeling – Jalapahar ridge in Siwalik Himalayas, between 26°31' to 27°31' N and 87°59' to 88°53' E. This range extends northward from Ghoom, at first rising abruptly to a height of 2366 m, then gradually decreasing to 2100 m at Chowrasta and again rising to 2149 m at Observatory Hill. Darjeeling municipality town covers an area of 10.75 km² and has 32 wards with around 22,000 household, over 350 hotels and restaurants, 25 vegetable markets, 10 fish and meat markets and 89 institutional holdings (Darjeeling Municipality, 2002).

Darjeeling municipal town rests on the ridge with synclinal structure composed of mostly metamorphosed Darjeeling Gneiss and Daling Schist with foliated Gneisses, Mica – Schists and occasional band of flaggy Quartzites and granulitic rocks highly prone to the complexities of geological movements. Surface runoff, rivulets and streams cut across the dip of the synclinal beds has created a situation favourable for landslides. The soils are mostly mountainous brown to dark brown soil with low fertility and high moisture content. It experiences an average humidity of 32% with mean annual rainfall of approximately 2812 mm. The temperature varies between an average maximum of +16.7 °C and average minimum of -0.9 °C. The town experiences five distinct seasons – Spring, Summer, Rainy (monsoon), Autumn and Winter, however, rainy season that lasts from mid-May to late-October and winter early-November to early-April dominate the weather seasons. During rainy season (June to September), the continuous rainfall even sometimes for 3 – 4 days accelerates surface runoff down slope enhancing erosion and undercutting of steep slopes. Water seepage into the soil makes it viscous and in many cases the soil slides down the mountain slope (Das, 2006).

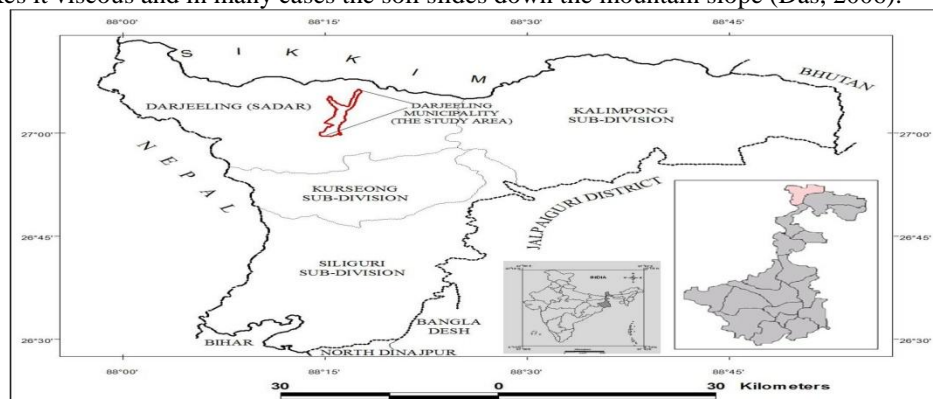
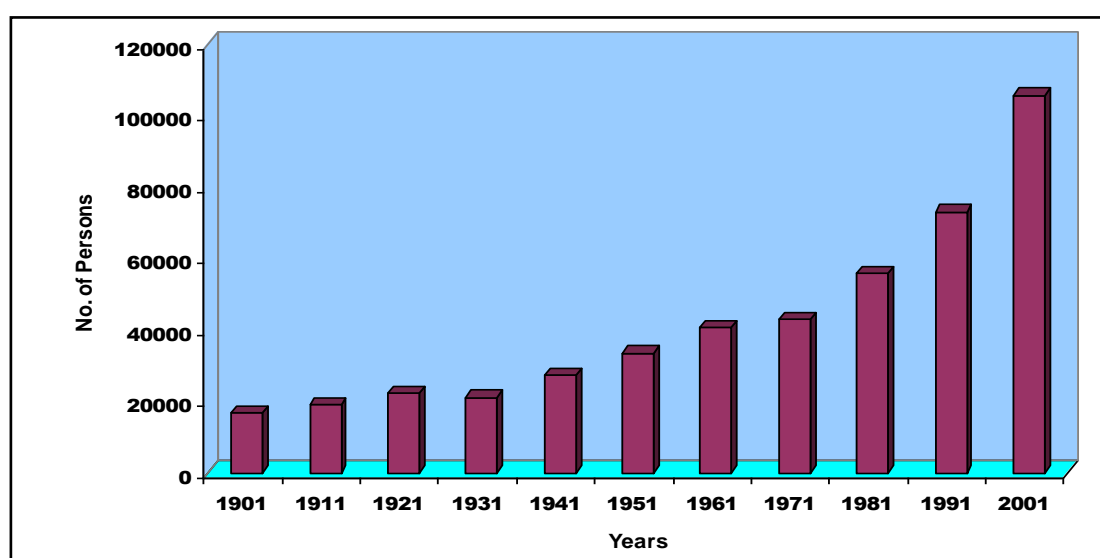


Fig. 1: Location of Darjeeling Municipality Town

Growth of Population in Darjeeling town and Demographic Characteristics:

The population of Darjeeling town is increasing ever since this region was taken by the British from Raja (King) of Sikkim and developed it as a Hill resort. In 1835, when the East India Company first acquired the area, it was stated to have population of only 100 people. The heavy forest cover and poor means of communication kept the number limited to those who could make a precarious living from rough cultivation of forests land and collection of forest products. The decision of the Company to develop Darjeeling as a hill resort gave an opportunity to people from neighbouring areas to migrate and take part in the development process. The original inhabitants mostly the Lepchas were rapidly outnumbered by settlers from Nepal and Sikkim. By the year 1850 Dr. Campbell, the first Superintendent reported that the number of inhabitants had risen to 10,000. The rapid influx of people was also noted by Sir Joseph Hooker when he visited Darjeeling about that time. When in 1869 a rough census was taken, the total number of residents was found to be over 22,000.

The town of Darjeeling has seen fluctuation in the growth of its population. However, at an average, the town has supported the growth rate of over 20% per decade. From 1970 onwards the growth rate of Darjeeling town has far exceeded the growth rate at the district level. The highest growth of population was in 1990's with 44.63%, which is far above the national, state and district level rate. In addition to this, the town has to support the floating population of 20500 in the form of tourists, students, visitors and wage earners (Darjeeling Municipality, 2001).



(Based on Census data)

Fig. 2: Total Population of Darjeeling Town (1901 – 2001).

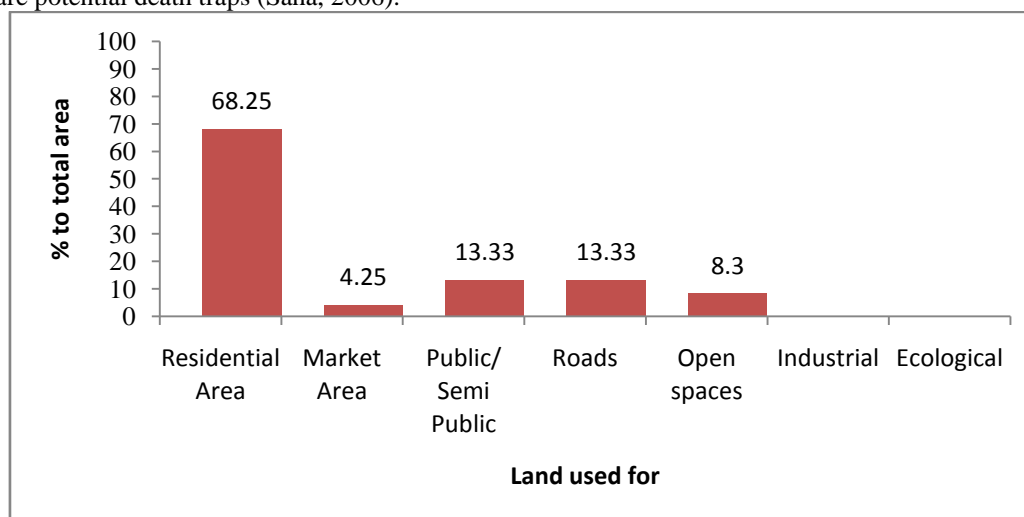
The Urban area has high literacy rate of about 85 % (Darjeeling Municipality, 2002), which is far above the national and state rates, with 85% of its male population and 82% of its female population as literates. The sex ratio of 928 females per 1000 males is below the national average, which is due to the immigration of the males from the surrounding rural areas. The density of 96613 persons per sq.km puts immense pressure upon the existing infrastructure of the town which was originally designed only for about 1000 persons.

Problems of the Study Area:

From the beginning of 19th century, development of road and communication, together with spread of market economy and policy interventions not only impacted the socio-economic dynamics of the area but also the rate of utilization of natural resources has increased manifold. Economic development in the last two centuries has been characterized by felling of forests, enhanced exports of medicinal plants, development of hydropower projects, construction of water resource works, enhanced tourism, exploration and extraction of minerals, conversion of forested land to orchards and tea gardens.

Since the town is situated on high slopes of the Himalaya, water and communication are the major problems faced by the residents of the town ; especially during the summer months of April to June there is acute shortage of drinking water. People are forced to collect water from the jhoras and most of the jhoras become dry during the summer season. In respect of communication, roads are very narrow due to rugged terrain. The drainage system is very poor and since this area experiences heavy rainfall and the rainwater sometimes overflows on the roads and incur more hardship on the town folks. All these problems have together combined to cause the emergence of slums in the urban area.

The residential areas within the Darjeeling town are characterized by high density, high-rise structures and slums. This has happened due to absence of development controls and regulations, leading to increase in construction on acute slopes. Being situated in seismic zone IV, these multi-storeyed buildings on vulnerable slopes are potential death traps (Saha, 2006).



(After Saha, 2006)

Fig. 3: Occupancies of Land for various purposes (in % to total area) in Darjeeling town.

Water Scarcity:

Natural springs from Sinchal Range are the main sources of water supply in Darjeeling town. Water is collected from over 30 springs and is carried down to two lakes. The lakes called Sinchal North with the capacity of 20 MG and Sinchal South with a capacity of 12.5 MG were built in 1910 and 1932 respectively. It was designed for the population approximately 10,000 people. Besides, there is Sindhap lake or the 3rd lake constructed by the P.H.E. (Public Health and Engineering) Department in 1984 with the capacity of 15 MG but it had some technical defect and failed to supply and store the estimated quantity of water. During the lean period when the yield of the springs is not sufficient the water is pumped from the Khong Khola. In addition, the collection and distribution centre at Bokshi Jhora caters small mountain streams to some extent the need of the people of the Rajbari area and its surroundings.

However, Darjeeling town still faces heavy shortages of water supply and the per capita availability of water in the town is far from the prescribed norms of 135 liters per day and only 50% of the Municipal households are connected to the Municipal water supply. The present water works infrastructure was built around the first quarter of the 20th century to cater the population of about 10,000. Thus, the majority of network is very old and dilapidated. The historic water supply problem has gone from bad to worse because of widening gap between supply and demand.

The inflow of water from the springs of Sinchal Range has been gradually decreasing with time. The massive deforestation in and around the sources is further aggravating the problem. Moreover, there are no nearby potential sources of water to augment the supply. Primary survey reveals the fact that only 10 liters of water is supplied to the average Municipal residents whereas, the Municipal figure shows it to be 40 liters. The acute shortages of water supply pose great threat to the tourism industry in Darjeeling.

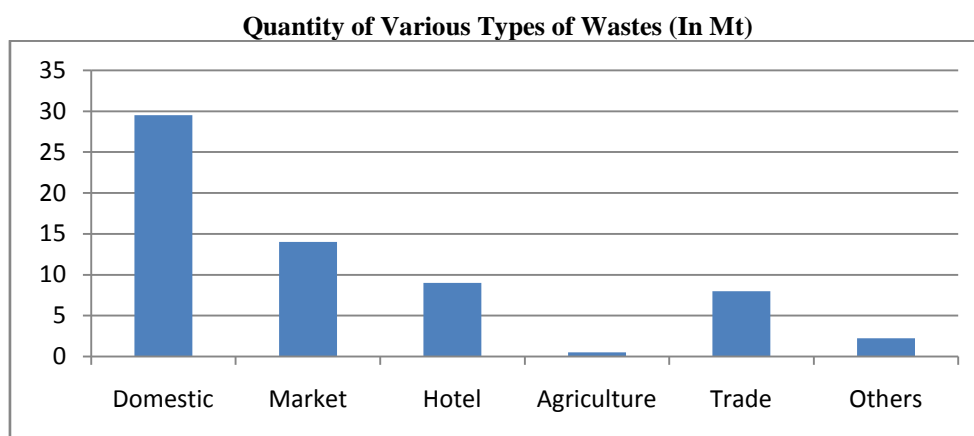
II. SEWERAGE AND SANITATION PROBLEM

Darjeeling town generates over 6.6 MLD (2001) of sewerage. The sewerage system of Darjeeling is age old, which was laid down in 1935 and covers only about 35% of the town at present. It was originally intended to serve only the European settlers and has almost broken down. The town has an underground sewerage collection and disposal system. The system collects the domestic waste from 2500 holdings and 50 community toilets, which is conveyed to 6 central septic tanks and ultimately disposed into the jhoras. 5 out of 6 septic tanks are in defunct state and the entire conveyance system needs repairs.

In the absence of any sewage facility, the major mode of disposal in the town is through individual sanitation facilities. 58% of the holdings have opted for an organized way of collecting and disposing the septic tank waste.

III. SOLID WASTES

According to Darjeeling Municipality office, 2002 report, Darjeeling town produces about 50 metric tons of solid wastes every day. Darjeeling town has a primary collection mechanism by ways of bins, which are managed and maintained by the Health and Sanitation Department of the Municipality. The collection vehicles of the Department pick up the solid waste from different parts of the towns and disposes off above the Hindu Burial ground. There are four tractors which dispose off the solid wastes and the disposal sites are in pathetic state. Moreover 150 staffs available to collect and dispose the solid waste can only cover 60% of the waste; the remaining wastes continue to accumulate in the town on a daily basis. In addition to the waste collection, the conservancy labors sweep the major streets of the town on daily basis (road length of 662 mts per day).



Source: Darjeeling Municipality

Emergence of Slums:

At present there are about 2581 slum household in Darjeeling town. Almost 12% of the total population lives in slum pockets in Darjeeling town. According to 2001, Darjeeling municipality records, slums are omnipresent in all the 32 wards except ward no 5, 15, 24, 25 and 30 as compared to 1981 report where the slum pockets were confined to only 4 wards namely ward no 16,20, 13 and 14.

These slums have emerged due to large influx of migrants from the surrounding areas viz. Nepal, Bihar, Tibetan refugees, and from surrounding rural areas who could not afford to live in better residential areas. Taking advantage of these poor people some landlords built houses of flimsy character using mostly thin wooden planks and corrugated sheets for the roof for housing these people.

These slum areas have low literacy rates and nearly 70% of the people have studied below class 10 level, lack sanitation facilities though community facilities have been provided by the Municipality but the dependency on these facilities comes to 38 persons per seat in Darjeeling town. These slum areas lack water supply facilities and efficient solid waste management system. Most of the garbage is dumped either into jhoras or lie besides the roads in the slum areas of Darjeeling Municipality. These slum pockets spoil the aesthetic beauty of the 'Queen of the Hills' but nevertheless they provide the essential labor force in formal and informal service sectors of the urban area.

Traffic Congestion:

All the roads in Darjeeling town except Hill Cart road and Leborg Cart road belong to municipality. Owing to the geology of the area all the roads follow the contour lines. The total length of all types of roads including stepped path within Municipality is around 9 km in length. The road density ranges to about 9 sq.km. All the road of Darjeeling Municipality area are not meant for heavy vehicles and majority of them were constructed prior to the independence period and today are in pathetic state. With rapid urbanization of Darjeeling town without any landuse plan, the main Cart road (i.e. National Highway 55) within the Municipal area has become a constant source of nuisance due to frequent traffic jams.

Development policies adopted by Darjeeling Municipality:

Keeping view of acute water shortage in Darjeeling town, in 1995 Darjeeling municipality requested the Darjeeling Gorkha Hill Council (D.G.H.C.) to move to the State Government to set up a committee to prepare a project report on the viability of various methods to augment the water collection and supply system. The high level committee, set up by the State Government in 1995 prepared a project to pump water from Balason river to Sinchal lake at an estimated cost of 39.5 crores (395 million Indian Rupees). However, the Government hesitated to implement the project on grounds of non-availability of funds. Thereafter, with the

concurrence of the State Government, Darjeeling Municipality tried to seek the financial assistance from the World Bank for the project. The project was duly submitted to the World Bank team which visited Darjeeling and was quite enthusiastic about the viability of the project. But the differences cropped up between the World Bank, State Government and D.G.H.C. which stopped the project from making any headway. Hence, the historic water problem of Darjeeling town still continues unabated. Other than this Darjeeling Municipality engages trucks to supply water to the residents of the town.

The State Government engaged a reputed Kolkata based firm 'Consulting Engineering Services (India) Pvt. Ltd.' In 1984 to prepare a project on the total upgradation of the sewerage system of Darjeeling. The firm submitted the report to the Government in 1985 with an estimate cost of Rs. 136,50,0000 to upgrade the entire sewerage system and to bring it to a serviceable standard. However, the project is still gathering dust with the Government.

In terms of solid waste management, the Municipality feels that the sanctioned staff pattern of the Government on the basis of the population i.e. 1 sweeper for every 1000 persons is detrimental to the Hill Municipality. Hence, a separate staff pattern has been requested to the Government on the basis of geological and geographical characteristics and heavy influx of floating population.

The high cost of road construction in Darjeeling and lack of abundant funds have all led to inefficiency in tackling the traffic congestion in the town.

IV. CONCLUSIONS

Darjeeling town which witnessed the rapid urban development after 1950 has been suffering very much due to unplanned settlement, increased pressure of population over available resources and increasing natural disasters. Although, growth in trade and tourism has created more jobs with improved living standards, but development in the last few decades has created several environmental problems. The rapid growth of population is forcing current dumping ground to be surrounded by growing villages, if this kind of encroachment is not checked in time by the Municipal authorities; there will be no place left for dumping the waste in future. There is also need for the construction of various sizes of subsidiary tanks in each and every village and ward as per the availability of space; if this initiative is not taken in proper time then there will be no space left. The crisis of drinking water also aggravates the health conditions of the inhabitants.

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