

**MOUNTAIN PEOPLE AND THEIR RESPONSE TO
ENVIRONMENT:
A STUDY OF DARJEELING HIMALAYA**

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Abstract:

Environment is the source of life on earth and it not only directs but also determines the existence, growth and development of mankind and all its activities. The entire aspect of planning the environment has a social dimension just because man is at the core of the problem. As society developed, man's impact on environment grew in scope and strength. Human interference – due to excessive population growth – is fast extending in Darjeeling Himalaya, leading to degradation of mountain environment. Destruction of the ecosystem is taking place in this Himalayan region despite the population's knowledge of the situation, and this constitutes the particular tragedy of the hills. The Darjeeling Himalaya constitutes a fragile and unique ecological system. The region is frequently plagued by environmental catastrophes. The environmental problems are varied and interlinked and owe their origin to ignorance and lack of integrated approach to socio-economic development based on various considerations of the environment.

This paper attempt to identify the nature of population growth in this mountain region and its impact on environment and their future prospect. The interaction between population and environment is very complex and dynamic. Therefore it is necessary to study the relevant concepts for better understanding of the changing pattern of man-environment relationship. It reveals from the study that the mountain environment of Darjeeling Himalaya is visibly deteriorating at a rapid pace. The trend is now increasingly that of its beautiful blend of

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mountain vistas, sylvan landscapes and a unique living heritage of beautiful buildings, facades and settings giving way to a sprawling slum of ugly and faceless box like structures, blighted neighborhoods, noisy surroundings, polluted air and water, vehicular congestion, compounded by decay, impoverishment, and day to day hardship. Thus the demographic planning for the region must include both population limitation and migration control, through a combination of socio-economic incentives and legal controls.

Key Words: Himalaya, Environment, Population growth, Mountain

Introduction:

The Himalayan mountain range in India is one of the most beautiful ecological wonders in the world. At the same time, it is one of the most threatened. The interaction between living things and environment has started from the day of existence of life on the earth. Environment is indeed a matter of great concern. This provides a base on which the whole life and economic system are built. Hence, understanding the environment of a region is important to comprehend its basic character. There are indeed, a wide range of physical, biological and man-made components that interact in building up an environment. A mountain terrain with its varied geologic, physiographic, climatic and other environmental conditions offers a wonderful geographical area, for the study in detail. This is more so in mountainous areas like Darjeeling Himalaya, inhabited by simple societies where environment articulates to a great extent to determine the socio-economic aspects. Rapid growth of population has become the most critical environmental constraint in Darjeeling Himalaya. Man is clearing forest for the extension of agriculture, settlement and industries. Animals and plants etc. have their own role in maintaining the ecological balance and if human changes any one of these elements, the whole eco-system is disturbed.

Aims & Objectives:

The area chosen for study has been delineated as cultural region where the elements in the landscape are closely interrelated. The present study aims at the following objectives:-

- (i) to study the trends of population growth in this mountain region
- (ii) to correlate the growth of population with that of environment

(iii) to assess the adverse impact on environment due to the massive population growth in the region.

(iv) & the ultimate aim is to analyze the future prospect for the betterment of environment in the region for the future generations.

The survival of biological community that includes man, animals and vegetation, depend on the interaction with physical environment that includes air, water, land etc. With the above idea in mind it is essential to study the environmental background of Darjeeling Himalaya to establish the relationship between different factors and human response to it. Thus the primary objective is to inspire, abet, encourage and motivate in conducting detailed research, documentation and highlighting the ecological stress of this mountain environment and make them not only to policy makers, scientists and administrators but also ensuing their dissemination down to the common people at large.

Delineation of the Study Area:

The Darjeeling Himalaya comprising of the three hill sub-divisions (Darjeeling Sadar, Kurseong and Kalimpong) is one of the least economically developed regions of West Bengal, in India. Darjeeling is the northernmost district of the frontiers state of West Bengal, extending between 26°27'10" to 27°13'05" North latitudes and 87°59'30" to 88°53'00" East longitudes, at an altitude of 2134 mts. The hill areas of the district which are considered for the study area has the total area of 2477.83 Sq. kms. Darjeeling Himalaya consists of a portion of the overlying hills of the lower Himalayas and stretch of territory lying along the base of the hills known as the Terai.

The people of Darjeeling Himalaya have a unique significance in the sense that it has persons comprising many social and linguistic groups. Historic development influenced by geopolitical forces has given rise to an ethnic composition and typical of a transactional zone in the Darjeeling Himalaya.

Materials and Methods:

The study is based principally on secondary data to explain the pattern of population growth vis-à-vis their impact on environment. The data for the present analysis have been obtained from the secondary sources like, District Census Handbooks of Darjeeling District, District Statistical Handbooks of Darjeeling, etc. The tools used for analyzing data range with statistical application to analysis the human response with environment depending on the analysis to be conducted.

RESULTS AND DISCUSSION:

Population Growth in the Mountain Environment:

Population of Darjeeling has increased remarkably during the last one hundred years. The region was largely under forest when it was acquired by the British in 1835 from the ruler of Sikkim. It had only 100 inhabitants at that time. Influences of the Britishers have played an important role in the growth of population in Darjeeling Himalaya. With the annexation of Darjeeling there came about various activities for the development of the region that required labour, which in the process led to increase in population mainly through in-migration. The effort to involve the local populace and these numbering 100 persons in 1835 rose to nearly 10,000 persons by 1850. In-migration followed with the introduction of the plantation and expansion of the administrative divisions. Kalimpong sub-division had a population of about 2530 persons during 1865 & the census of Darjeeling taken in 1869 put the number of inhabitants of this tract to be over 22,000.

Distribution of population is an aspect of population change which has become important in recent years. According to 2001 Census, the total population of Darjeeling Himalaya as at sunrise of 1st March, 2001 stood at 7,90,591 persons consisting of 4,01,520 males and 3,89,071 females. In the year 1991, this mountain region of Darjeeling experienced a total population of 6,84,818 persons (3,51,881 males and 3,32,937 females) as against a total population of 5,51,374 persons in 1981 out of which the total male population constituted 2,86,556 and the rest female population of 2,64,818.

The percentage of rural population gradually declined whereas the percentage of urban population increases during 1981-2001. This would mainly because of migration from rural to urban areas for employment. The total urban population of the region is marked by 21.59 per cent (1,19,067 persons), 23.71 per cent (1,62,343 persons) and 27.15 per cent (2,14,651 persons) of the total population during 1981, 1991 and 2001 respectively. The total rural population is marked by 78.41 per cent (4,32,307 persons), 76.29 per cent (5,22,475 persons) and 72.85 per cent (5,75,940 persons) during 1981, 1991 and 2001 respectively.

It can be visualized from the index of growth of population that the pressure of population in rural areas in Darjeeling Himalaya is not so high as in case of urban areas. Darjeeling, Kalimpong, Kurseong and Mirik are the four important hill towns and urban centres of Darjeeling Himalaya. These accommodated 25.22 per cent of the total population of the

region in 2001. The process of urbanization is slow, but its unimpeded ingress cannot be ignored in view of the overall changes it has already wrought on the natural environment of the region concerned.

It has been projected that during 2011, the urban population of Darjeeling town will have about 157,296 persons, which is highest in population size as compare to other towns and will increase at the exponential growth rate of 3.83 per cent per year. Kurseong town on the other hand is expected to accommodates the population of 59,891 persons at the growth rate of 4.02 per cent per year and ranks second position in population size among the towns. Followed closely by Kalimpong town will accounts for 47,614 persons at the growth rate of 1.02 per cent per year. Mirik town will have the projected population of about 11,900 persons where the exponential growth rate is expected to be 2.63 per cent per year (2001-2011).

Mountain People and their Response to Environment:

Man is completely dependent on the environment for his existence. The dynamics of environmental destruction have assumed a global dimension in recent decades and aptly called for deft and immediate handling in this fragile environment. Some of the damages that have taken place already are irreversible and time consuming as well. There is hardly any measure by which we can fully control the environmental degradation in the hills but some procedures can be adopted to check the constant flow of migrants, man-made erosion, which greatly affects the climate and hydrological balance.

It is essentially man's influence that has upset the natural balance, and it is in the adaptation of his interaction with the environment that we must seek for ways to restore it. Human interference – due to excessive population growth – is fast extending in Darjeeling Himalaya, leading to pollution, deforestation, soil erosion, degradation of landscape etc. Destruction of the ecosystem is taking place in the mountain region despite the population's knowledge of the situation, and this constitutes the particular tragedy of the region.

The Darjeeling Himalaya constitutes a fragile and unique ecological system. The region is frequently plagued by environmental catastrophes. The natural imbalances and ecological crisis that arise in the Darjeeling Hills is due to two reasons: - (i) demographic threat, due to mounting population pressure, and (ii) technological threat, due to man's acquisition of higher technological skill and knowledge. That is why man is invading in the remote serene highlands

and destroying its beauty and grandeur. The environmental problems are varied and interlinked and owe their origin to ignorance and lack of integrated approach to socio-economic development based on various considerations of the environment.

Soil is the most important natural resource for agriculture and vegetation. Soil erosion in the Darjeeling Himalaya is taking place rapidly by the removal of topsoil which is rich in silt and humus; so it is one of the major problems, which is disturbing the ecological balance and agricultural development over the region. The soil is carried down the slope by the streams and surface flow of water. So, soil erosion should be encouraged by afforestation, slope terrace cultivation, practices and provision of proper drainage system.

Landslide is one of most rampant environmental hazards in Darjeeling and surrounding hill areas. Landslides are not new in Darjeeling hills and every year in the monsoons landslides destroy properties and claim lives. Although landslide is a natural phenomenon, landslides in the hills are mostly triggered by man-made structures and practices. Improper drainage systems, improper waste management, undercutting steep slopes for the formation of paths, roads etc and unscientific cultivation are the factors which augment the landslides in and around Darjeeling.

Today in the hills every now and then the scenery is changing with the cropping with unplanned growth of new buildings everywhere due to increase in population. Darjeeling now stands as one of the most populated hill stations in the world. Deforestation and hence soil erosion is also a factor responsible for landslides. When seen in the bigger picture all the factors discussed above are somehow related with human activities which results not only in landslides but also affects other environmental aspects.

In view of the ever-increasing problems of landslides in and around Darjeeling, people must be made aware of the possible dangers. It is true that one has to make room for the growing population and in this pursuit he has to utilize every piece of land available. But the precautions that have to be adopted should not be neglected. Especially in the towns, the revetments are not maintained properly, the weep-holes are choked and the drains are dumped with garbage restricting free drainage of water. Moreover, the present land-use system should be properly evaluated. The construction of high-rise buildings should be stopped immediately.

Rapid depletion of forests is environmentally the most destructive force in Darjeeling Himalaya. The main reason for this is the random clearance of forests for a short-term

commercial profit, dependence on forests for fuel and fodder, uncontrolled grazing and pilferage of trees, extension of cultivation and encroachment due to population pressure. The village on private forests having disappeared, the people have been compelled to encroach upon the reserved forests for their fuel, fodder and other needs. A very large-scale deforestation over the fragile hill slopes has brought about an abrupt change in the ecosystem in many areas and this has been aggravated by the failure to replace the felled trees in the same form. The rate at which the forests are being wiped out in the region without heed to massive soil-erosion and other concomitant hazards has spelt potential socio-economic danger for the people in more than one way.

During the decade 1901-1911, over $\frac{1}{3}^{\text{rd}}$ of the region was covered by virgin forests, while the tea gardens extended over $\frac{1}{7}^{\text{th}}$ of the area. The vegetation kept the fragmented blocks of rock in compact mass with their roots. This prevented slope failure even in times of heavy rainfall. This was the situation in Darjeeling upto the 19th Century. By 1961, the Darjeeling town recorded a population of about 40,651 persons. The percentage of increase between 1931-1961 being almost 92%. The density figure changed from 167 persons/sq. km. in 1961 to 319 persons/sq. km. in 2001. In a desperate attempt to acquire as much arable land as possible extensive areas under forest cover were being gradually encroached upon. The ever-increasing number of people haphazardly settled in every bit of land available. It was perhaps the rapid denudation of the forest cover, which aggravated the problem of landslips, coupled with the geological, rainfall and slope characteristics.

Pest control is an important cultural practice in tea plantations. Malathine, aldrine, sulphur, lindane, perenox, cuprokyt, blitox, bordeaux mixture, aretan, cerasan, prowex etc. are extensively used in tea gardens. In spite of the fact that these chemicals ensure better yield of tea, yet the washed out residues of these pesticides contaminate water to various extent. People living nearby tea gardens, therefore, run a risk of health hazard.

Concomitant with the increasing size of urban places and the number of persons inhabiting them, problem of waste disposal has become rampant in this hill region. There is as yet no clear-cut policy as to how to cope with the increasing load of waste materials by the concerned Municipalities. The areas earmarked for waste disposal are also few and far between. Food remains, garbage, paper, plastic, glasses, metallic cans, fuel residues, rubble, street and domestic

sweepings etc. make up the urban refuse. The narrow hill streams (locally known as jhora) and their inward facing valley sides are generally used as waste disposal sites. These loose waste products tend to make a secondary slope burying the original one below it. During the post-monsoon period, as garbage piles up, the land gradient slowly changes to attain steeper facets. Now, with the onset of monsoon, the loose secondary slope quickly becomes destabilised. The huge bulk of load at many occasions choke the tiny springs downslope and even lead to blockage of small rivulets. Moreover, the leachates that ooze out of the garbage contains poisonous gases along with decomposed organic matter, toxic hydrocarbons and pathogenic microbes. These harmful substances pollute the stream water and valley-side soil. The residents also compound the problem by dumping their waste, ranging from construction rubble to dead pets into jhoras. During dry season they pose health hazard and during monsoon they get washed down with the rain posing the same problem to the people downstream.

Regular cleansing of drains, sweeping of public places and removal of garbage are accepted sanitation responsibility of a civic body. Earlier Darjeeling used to be spotlessly clean because of less population, responsible work culture and stricter discipline. The increasing population, the deteriorating work culture and the prevailing social indiscipline are contributing to growing insanitary condition within the town.

Due to increase in population the pressure also increases on natural resources and their over-exploitation takes place. The forest and other natural preserved areas are disturbed and encroached upon by the human habitation. With the increase in population the pollution also increases if the pollutants are not properly disposed of. It is, therefore, more essential to take effective remedial measures for keeping away the pollutants and maintain the health of our hill environment. During the tourist seasons in particular it has been observed that the region became virtual garbage dumps. This is perhaps due to the lack of civic sense both in the local people and the tourists. The pollution not only causes the health problems for the inhabitants but also has deleterious effect on the wildlife resources.

In Darjeeling, this fact can be easily viewed when one takes look at the traffic that is prevalent these days. The registration in the number of vehicles is on the rise mainly because of tourism. So without proper pollution control agencies to check the pollution, the vehicular pollution in the Darjeeling Hill Areas especially in the urban centres are on the rise. And

according to the 'Reproductive and Child Health Project for Darjeeling Municipal Town, April 1998', around 20.3% of the population suffer from Arterial Respiratory Infection.

Future Prospect:

One of the major causes of environmental degradation and ecological imbalance in India could be attributed to rapid growth of population, which is adversely affecting the natural resources and environment. The growing population and the environmental deterioration face the challenge of sustained development without environmental damage.

Thus the utmost important step to be taken to tackle the problems of environmental degradation and ecological imbalance is to check the population growth. However, a population growth can be an asset only for it has the requisite skills as well as attitudes to add value to the technical and economic environment. The environment protection should not be a responsibility of government alone but local people and leaders should be encouraged to make dedicated efforts to eradicate the environmental problems. There is need of immediate steps through policy implications to halt environmental damage and to conserve environment for healthy society and sustainable environment which is most important our survival.

To minimize the soil and land erosion along the river channels it is necessary to implement proper and scientific River Training Programme. Most of the rivers/jhoras in and around the towns of Darjeeling Hills are more or less blocked with non-disposable plastic garbage, which not only create water and air pollution but also create landslide hazards during monsoon thereby reduces the carrying capacity of the land.

Findings & Conclusions:

Darjeeling Hill area is a region which is unique from environmental and eco-perception. The Darjeeling Hill area is a fragile terrestrial system, which is much too often disturbed by various environmental catastrophes. Needless and reckless obliteration of forests, faulty agricultural methods, unscientific use of slopes, especially in construction works have changed the scenario in Darjeeling Himalaya. The population in township areas is increasing at an alarming rate but the civic and infrastructural facilities were designed to cater to the needs of a limited population.

It is obvious that human occupancies and the resultant interference in nature have modified the environment to a great extent changing the socio-economic setup of Darjeeling

Himalaya. Rapid urban growth and the ever-growing resident and tourist population put tremendous pressure on the fragile ecosystem of the Darjeeling Himalayan Region. Darjeeling has witnessed a sudden growth in the number of taxis and vehicles, which is now posing a major threat to the health and environment of the people in terms of vehicular pollution.

To sum up, it is a fact that the causes of environmental degradation can never be totally controlled but can be checked to a great extent. It is, therefore, necessary to pay attention to the problems of environmental degradation and to strike a balance between conservation of nature and population growth. This will ensure the pace of sustainable environment in this Himalayan zone. It is only through the people's own initiative and understanding that the fragile mountain eco-system can be saved from a distance.

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