

URBAN DEVELOPMENT AND ENVIRONMENTAL POLLUTION IN JAIPUR CITY, RAJASTHAN

M. M. Sheikh

Associate Professor, Geography
Govt. Lohia P.G. College, Churu-331001 Raj. INDIA
Email: mmskh@rediffmail.com

Abstract: *In an era of global climate change and rapid urbanization, innovations on governance of urban systems are critically required as 50 percent people are now living in less than 3 percent of the earth's urbanized terrestrial surface. Urbanisation in India is neither unique nor exclusive but is similar to a world-wide phenomenon. In an era of global climate change and rapid urbanization, innovations on governance of urban systems are critically required as 50 percent people are now living in less than 3 percent of the earth's urbanized terrestrial surface. Urbanisation in India is neither unique nor exclusive but is similar to a world-wide phenomenon. According to the City Development Plan Jaipur is a fast growing city, ranking 11th in the list of Indian mega cities with a population of 2.3 million and annual growth rate of 4.5 percent. Jaipur forms the urban core being the only million plus city in the state. It is the primate city of the state acting as the centre for education and employment opportunities. It attracts migration from all parts of the state (70 percent of migrants come from within the state). Over 2 lakh migrants were added to Jaipur city during 1991-2001. The city offers jobs in commerce, services and the informal sector and shows a high economic growth compared to several other Indian cities. Jaipur is one of the most sought after tourist destination in the world with about 3000 tourists visiting the city every day. The objective of the study is to find out the urbanisation trend and environmental pollution in the city.*

Key words: Urban, Development, Urbanisation Trend, Migration, Environment.

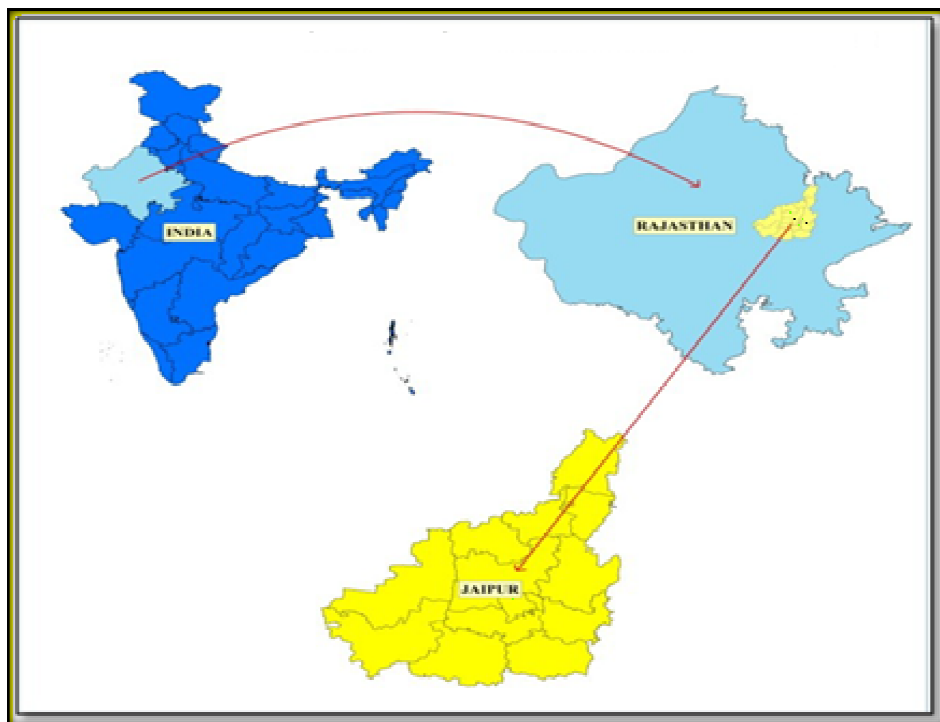
Introduction

Urbanisation in India is neither unique nor exclusive but is similar to a world-wide phenomenon. Indian urbanization has proceeded as it has elsewhere in the world as a part and product of economic change. Occupational shift from agriculture to urban-based industry and services is one part of the change. At the same time, increased agricultural performance has also promoted urbanization as noticed in several top rice and wheat producing districts in the country. The Urban population of India constitutes 285 million people and, in some quarters, it is estimated to double by 2025. Over one-fourth of this population lives in urban slums under poor and unsatisfactory environmental conditions, with high levels of susceptibility to disease and ill health. Trends in urban poverty suggest that the number of urban poor in the country is, in all, likelihood, expected to increase considerably in the years to come. At the Census 2011 there are 7,935 towns in the country. The number of towns has increased by 2,774 since last Census. Many of these towns are part of UAs and the rest are independent towns. The total number of Urban Agglomerations/Towns, which constitutes the urban frame, is 6166 in the country. The total urban population in the country as per Census 2011 is more than 377 million constituting 31.16 percent of the total population. The literacy rates among both males and females have shown improvement in Census 2011 compared to the last Census. The literacy rate in the country as a whole is 74.04 percent. In the rural and the urban areas the literacy rates are 68.9 percent and 84.9 percent respectively. Cities occupy less than 3 percent of the global terrestrial surface, but account for 78 percent of carbon emissions, 60 percent of residential water use, and 76 percent of wood used for industrial purposes. In 1800, there

was only one city, Beijing, in the entire world that had more than a million people; 326 such cities exist 200 years later (Brown 2001). Indeed, such rapid has been the pace of growth that in 1900 just 10 percent of the global population was living in urban areas which now exceeds 50 percent and is expected to further rise to 67 percent in the next 50 years (Grimm et al. 2008). Jaipur is one of the first planned cities of India. According to the City Development Plan Jaipur is a fast growing city, ranking 11th in the list of Indian mega cities with a population of 2.3 million and annual growth rate of 4.5 percent. Jaipur forms the urban core being the only million plus city in the state. It is the primate city of the state acting as the centre for education and employment opportunities. It attracts migration from all parts of the state (70 percent of migrants come from within the state). Over 2 lakh migrants were added to Jaipur city during 1991-2001. The city offers jobs in commerce, services and the informal sector and shows a high economic growth compared to several other Indian cities. Jaipur is one of the most sought after tourist destination in the world with about 3000 tourists visiting the city every day.

Study Area

Jaipur is situated in the eastern part of Rajasthan, surrounded on three sides by the rugged Aravali hills. Jaipur is located at 26°55'N 75°49'E. It is surrounded by Alwar and Sikar in the North; by Sikar, Nagaur, and Ajmer in West; by Ajmer, Tonk, and Sawai Madhopur in the South and by Dausa and Bharatpur districts in East. It has an average elevation of 430 meters. Jaipur was founded in 1728 A.D. Maharaja Jai Singh was the founder of Jaipur city which is famous for its wonderful architectural planning. The city has many historical monuments and buildings even as on today. The climate of Jaipur city is semi arid and average rainfall per year is 556.4 mm. The rainy season lasts from June to September. The dry bulb temperature lies between 45° C to 25° C in summer and 22° C to 8° C in winter. The city is renowned for heritage and its colour symmetry and thus known as the pink city. According to the census 2011, Jaipur district has a population of 6,663,971, which gives it a ranking of 10th most populous district in India. The district has a population density of 598 persons per square kilometre and a population growth rate of 26.91 percent in the decade 2001-2011. The gender ratio of this district is 909 females for every 1000 males and a literacy ratio of 76.44 percent. As of 2011, Jaipur has a population of 3,073,350. The Population of the Jaipur Metropolitan area is 3,646,590. Jaipur is the 10th largest city of India according to census of 2011.



Objectives

The principal objectives of this study are enumerated below. These objectives relate to current perceptions of key environmental challenges.

- To assess the industrial development and its impact on city's environment.
- To assess the tourism and its impact.
- To study the urban transport system and traffic problems.
- To assess migration and its impact and slum problems.
- To highlight the cause of the environmental degradation and its impact on human health.

Methodology

The study is based upon the primary data collected through questionnaire and secondary data available from different published reports. About 1000 persons were selected to assess the urban development and its impact of environment. There were 1000 respondents interviewed with the help of a structured questionnaire.

Population

Jaipur city's population is around 3.07 million (2011 census), with 17 percent of total urban population of Rajasthan. As per 2011 census, Jaipur city witnessed a 32.2 percent population growth. During 1951- 2011, the city's population went up five 2 times. Decadal population growth trend have been given in the following table.

Table 1: Decadal Population Growth, 1871-2011, Jaipur City

Years	Population	Variation	Decennial Growth in Percentage	Percentage Growth per Annum
1871	137,887	-	-	-
1881	142,578	+4,691	+3.40	0.34
1891	158,905	+16,327	+11.45	1.14
1901	160,167	+1,262	+0.79	0.79
1911	137,098	+23,069	-14.40	-1.44
1921	120,207	+16,891	-12.32	-1.23
1931	144,179	+23,972	+19.94	+1.99
1941	175,810	+31,631	+21.93	+2.19
1951	291,130	+115,320	+65.59	+6.55
1961	403,444	+112,314	+38.58	+3.85
1971	636,768	+233,324	+57.83	+5.78
1981	1,015,160	+378,392	+59.42	+5.94
1991	1,518,235	+503,075	+49.55	+4.95
2001	2,324,319	+806,084	+53.09	+5.30
2011	3,471,847	+1,147,528	+49.37	+4.94

Source: District Census Abstract, 2011, Gol

Poverty and Human Development

The structure of world economy is such that the rich grow richer and poor grow poorer. Surplus is created by the rich countries at the cost of poor countries due to unfavourable trade terms and most of the savings of the developing countries goes back as refund of loan and interest. This could equally be true of the rich and poor states within the country. However, economic disparity within the country can be eliminated through better planning, better management of economic and manpower resources which can ensure balanced and sustainable development of all states.

Population Growth and Environment

The relationship between population growth and environmental degradation may appear to be rather straight forward. More people demand more resources and generate more waste. Clearly one of the challenges of a growing population is the mere presence of so many people sharing a limited number of resources strains the environment. A large proportion of these populations are supported through subsistence agriculture. As populations grow competition for fertile land and the used of limited resources increases. Meeting the increasing demand for food is probably the most basic challenge and the most salient population and environment crisis.

As we all know that population is increasing day by day very fast. Due to this number of problems are increasing like environmental pollution, unemployment, poverty, fast consumption of natural resources, migration, urbanization, slums and so on. The following table shows that 65 percent people are positive in response of regarding increasing of population. About 10.9 percent reported that they don't know whether population is increasing or not. The following table shows the response of people about increasing population.

Table 2: Population Increasing

Category	Response	
	Number	Percent
Yes	650	65.0
No	241	24.1
No response	109	10.9
Total	1000	100.0

Source: Field Survey

Connection between Environmental and Society

A serious problem the society is facing at present is the deterioration of both the natural resources and environment. Human activities generate environmental pressure in different ways. Notable among them is overexploitation of fertile agricultural land renewable resources such as water. Environment as the term itself indicates is anything that surrounds or environs us. Environment in this sense is made of all those things which though distinct from us affect our life or activity in some way. It consists of all surroundings and influences, whatsoever that are present whenever an event occurs. It refers to those forces, situations, or stimuli that affect the environment from outside. Environment is thus not a simple but a complex phenomenon and consists of various forms such as physical environment, biological environment, social environment and supra-social environment.

Global Environmental Concerns

Human life is all about adaptation, especially to our environments. Past civilizations were confronted with some of the environmental challenges that we are familiar with today. For example, environmental decay forced people to abandon the once-fertile region of the Middle East known as the 'cradle of civilization.' Or in more modern times, the advent of the Industrial Revolution greatly increased pollution amounts in Western Europe. However, there are some significant differences between those issues and ones we currently find ourselves facing. First, contemporary environmental issues have taken on a global scale, whereas in the past, such issues were confined to small parts of the globe. Secondly, current environmental concerns are often products of our own doing, whereas in the past, concerns were much more to do with the confines of nature. Lastly, current environmental concerns are worsening at a more rapid pace than in the past. Ancient societies had more time and space to deal with environmental threats than we do today. Collectively, each of these qualities makes an ecological challenge a global environmental concern. In this lesson, we will briefly cover some of the more major global environmental concerns, as well as discuss measures that are being taken to help correct them.

Climate Change

One of the biggest global environmental concerns is related to the increase of the average global temperature. There is a consensus among scientists that greenhouse gases are altering the atmosphere in ways that ultimately contribute to climate change and higher temperatures. Human activities are the main causes of these climate developments due to the heavy development of industry, which creates pollution. What causes this situation is when the amount of carbon dioxide increases in the atmosphere and traps solar radiation, which then increases the atmosphere's temperature. The increase of pollution in the atmosphere not only leads to the changing in the global climate, but it also leads to some other serious problems.

Global Warming and Climate Change

The country's large population and rapidly increasing energy use plays an important and growing role in global warming. Global warming can have major physical, environmental and socioeconomic consequences, which can be both positive and negative. The estimation of these impacts is complex and marked with uncertainties. Climate change would cause changes in 14 precipitation patterns, ocean circulation and marine systems, soil moisture, water availability, and sea level rise. These would make an impact on agriculture, forestry and natural eco-systems like wetlands and fisheries. Also with rising temperatures, and subsequent increasing heat stress and alternation in patterns of vector-borne diseases, the global population would be more vulnerable to health problems, causing disruptions in settlement patterns and large-scale migration. The people of the study area accepted that global warming and climate change is occurring very fast. About 54.5 percent respondents aware about the population and its impact on climate change. About 30.8 percent respondents don't know the global climate change and its impact. The details are given below.

Table 3: Change Global Climate

Category	Response	
	Number	Percent
Yes	545	54.5
No	147	14.7
Don' Know	308	30.8
Total	1000	100.0

Source: Field Survey

Poverty and Environmental Degradation

According to World Bank Report on "Global Economic Prospects" published in 2007, about 472 million (33.2 percent) of population in the total population of 1421 million are living in absolute poverty in South Asia (2003). On the other hand the further estimation shows that, total number of persons living with absolute poverty by the year 2015 could reduce to 273 (16.2 percent) millions in South Asia. There is much controversy surroundings the poverty – environmental degradation nexuses. However, the predominant school of thought argues that poverty is a major cause of environmental degradation and hence it is suggested that if the policy makers want to address the environmental issues, then they must first address the poverty problem with respect to a region. Another school of thoughts argues that this causal link is too simplistic and the poverty environmental nexus is governed by a complex web of factors. The poverty is said to be both cause and effect of environment degradation. Because, poor people who cannot meet their subsistence needs through purchase are forced to use common property resources such as forests, for food and fuel, pastures for fodder and ponds and rivers for water. Hence, this directly contributes to environmental degradation through over exploitation of natural resources like land, air and water.

In recent decades, poverty and environmental degradation have been increasingly linked. The poor have not only suffered disproportionately from environmental damage, but have they become major cause of ecological stress. Pushed into fragile lands due to population growth and inequitable income distribution patterns many of the poor have over-exploited local resource base. Short-term strategies such as abbreviated fallow periods, depletion of topsoil, and deforestation permit survival in the present but place enormous burdens upon future generation. In this context, there is a clear danger of India's continuing to show a pattern of divergent development, with parts of the country making progress in many fronts, and other parts stagnating. The following table shows that 44.3 percent respondents accept that poverty and environment are interlinked and both are result of over population. The details are given in the following table.

Table 4: Poverty and Environment

Category	Response	
	Number	Percent
Yes	443	44.3
No	422	42.2
No Response	135	13.5
Total	1000	100.0

Source: Field Survey

Air Pollution and Environmental Degradation

In general, most of our environmental challenges can be traced to the erroneous development strategy adopted by Indian state, particularly after Independence. The life style of resource rich nations of the west came to be accepted as the norms, and development planners failed to find a solution to this fact in the constraints of the our resource-base, sustainability question, etc. while formulating plans. A near lack of vision is apparent on the part of our planners in that, they instead of promoting mass public transport, allowed corporate automobile industry to market a dangerously high number of cars, two- wheelers etc., in total disregard to environmental factors and carrying capacity of our road network. However, in the Rajasthan case the public transport like buses and trains are the prime mode of transport for a majority of the people. In the absence of reliable public transport, the middle class people use two wheelers and three wheelers (Auto's) for their daily commuting.

The rapid increases in the number of private transport vehicle, particularly of two wheelers and three wheelers on Rajasthan roads has been causing massive congestion on roads all over the state, particularly in the major metros. The environmental and health consequences of this increased vehicle population are massive; air pollution in most our metros have reached alarming levels. Congestion, road rage and fatal accidents have become common, and economically nightmarish. Vehicular emission has been going up in proportion to the growing number of motor vehicles. Heavy dependence on fossil fuels for transportation is the major reason for air pollution in the state. Though the recent generation of motor vehicles is relatively eco- friendly, the large number of older vehicles still continues to pollute by their disproportionate toxic emissions. The degree of air pollution is severe in Rajasthan. Hence there is urgent need to curb the massive air pollution caused primarily by existing old generation of motor vehicles. Transport ministry/ departments need to evolve strategies to discourage running of technically obsolescent vehicles in order to reduce auto emission. It is also required to introduce stringent policies to reduce air pollution in the state.

Indian cities are among the most polluted in the world. Air in metropolitan cities has become highly polluted and pollutant concentrations exceeds limit considered safe by the World Health Organization (WHO). Suspended particulate levels in Delhi are many times higher than recommended by the World Health Organization (WHO). The urban air

pollution has grown across India in the last decade are alarming. Some of the most important air pollutants are residual suspended particulate matter (RSPM), suspended particulate matter (SPM), nitrogen dioxides (NO₂), carbon monoxide (CO), lead, sulphur dioxide (SO₂) etc. The main factors accounts to urban air quality deterioration are growing industrialization and increasing vehicular pollution, industrial emissions, automobile exhaust and the burning of fossil fuels kills thousands and live many more to suffer mainly from respiratory damage, heart and lung diseases. In the countryside, nitrates from animal waste and chemical fertilizers pollute the soil and water, and in the cities, the air is contaminated with lead from vehicle exhaust.

The indoor air pollution may pose an even greater hazard for human health. Cooking and heating with wood, crop residues, animal dung, and low-quality coal produce smoke that contains dangerous particles and gases. When fuels such as these are burned indoors, using inefficient stoves and poor ventilation, they can cause tuberculosis, other serious respiratory diseases, and blindness (Mishra, Retherford and Smith, 1999). In fact, indoor air pollution from cooking and heating with unsafe fuels has been designated by the World Bank as one of the four most critical environmental problems in developing countries. About 74.5 percent respondents of the area reported that air pollution is increasing day by day. The details are given below.

Table 5: Air Pollution

Category	Response	
	Number	Percent
Yes	745	74.5
No	147	14.7
No Response	108	10.8
Total	1000	100.0

Source: Field Survey

Source of Air Pollution

The main source of air pollution is vehicles in the city. About 45 percent respondents said that vehicles are main source of air pollution. On the other hand 31.6 percent respondents said that industries are main source of air pollution. About 8.9 percent said that they don't have any idea about causes of air pollution. The following table shows the response of source of air pollution.

Table 6: Source of Air Pollution

Category	Response	
	Number	Percent
From Vehicles	450	45.0
From Industries	316	31.6
From Home	145	14.5
Other	89	8.9
Total	1000	100.0

Source: Field Survey

Biodiversity and Development

All the plans drawn and implemented by the Government or non-government organisations have not get good result to follow principle of biodiversity. This has resulted into soil losing productivity, water sources drying up and forest wealth degenerating. It has been clearly defined that biodiversity does not include only life forms of various groups but also the culture of the people, livelihood and the uses of traditional knowledge which enables them to derive direct or indirect benefits from forests areas for their livelihood and jobs. This needs to be checked and monitored at all stages by the authority appointed.

Environment and Development

According to the United Nations Framework Convention on Climate Change (UNFCCC) secretariat, the overwhelming direct cause of deforestation is agriculture. Subsistence farming is responsible for 48 percent of deforestation; commercial agriculture is responsible for 32 percent of deforestation; logging is responsible for 14 percent of deforestation and fuel wood removals make up 5 percent of deforestation. Experts do not agree on whether industrial logging is an important contributor to global deforestation. Some argue that poor people are more likely to clear forest because they have no alternatives, others that the poor lack the ability to pay for the materials and labour needed to clear forest. One study found that population increases due to high fertility rates were a primary driver of tropical deforestation in only 8 percent of cases. Other causes of contemporary deforestation may include corruption of government institutions, the inequitable distribution of wealth and power, population growth and overpopulation, and urbanization.

The following table shows that about 69 percent people are very well aware about negative impact of population on environment and development. They agreed that high growth of population will affect the environment in negative way. They will require more resources and it will create more pollution. About 20.6 percent respondents are not aware about the effect the population on environment and development. About 10.4 percent people have not given any response. The details are as follows. (Figure No. 26)

Table 7: Impact of Increasing Population on Environment and Development

Category	Response	
	Number	Percent
Yes	690	69.0
No	206	20.6
No Response	104	10.4
Total	1000	100.0

Source: Field Survey

Environment and Population Interlinked

It is now well accepted that population, poverty, the economy and environment are interconnected. Poverty and general lack of access to capital, resources and technology contribute to deforestation. The population pressures can lead to resource degradation and poverty. There is a growing emphasis that economic policies also affect poverty and environment, be it direct or indirect, bearing on the availability as well as utilization of natural resources. The growing population has forced poor villagers to deforest and cultivate the deforested land for agricultural purposes and to meet their livelihood needs. The poor are both agents and victims of deforestation. Undoubtedly, clearing of forests for agricultural purposes will increase income but this is not without any other side effects. The continuing need for family labour supports high fertility and rapid population growth. Continued deforestation will have grave consequences for the health of both humans and ecosystems.

The consequences of unrelenting population growth on natural resources depletion and environmental degradation are not easily dealt with. The lack of knowledge is a problem. Thus, there is a need to promote public awareness of the linkages between population, poverty and environment. Environmentalists and economists increasingly agree that efforts to protect the environment and to achieve better living standards can be closely linked and are mutually reinforcing. Slowing the increase in population, especially in the face of rising per capita demand for natural resources, can take pressure off the environment and buy time to improve living standards on a sustainable basis (Green, C.P., 1992). The following table shows the link between population and environment. About 63.8 percent respondents reported that environment and population are interlinked. If the population will increase the

environment will affect in negative way. About 26.4 percent persons reported that there is no any link between environment and population. The following table shows the details of respondents.

Table 8: Environment and population interlinked

Category	Response	
	Number	Percent
Yes	638	63.8
No	264	26.4
No Response	98	9.8
Total	1000	100.0

Source: Field Survey

Industrial Impact

The following table shows that 67.8 percent respondents accept that industrial impacts are very high in the city. Due to industries pollution is increasing steadily. Whereas 27.7 percent said that there is no any negative impact of industries in the city. The details are given in the following table.

Table 9: Industrial Impact

Category	Response	
	Number	Percent
Yes	678	67.8
No	277	27.7
No Response	45	4.5
Total	1000	100.0

Source: Field Survey

Tourism Impact

The following table shows that 35 percent respondents accept that tourism is also one of important factor of increasing pollution. Due to tourism pollution is increasing i. e. 35 percent agreed upon this issue. On the contrary 57 percent said that there is no any negative impact of tourism in the city. The details are given in the following table.

Table 10: Tourism Impact

Category	Response	
	Number	Percent
Yes	350	35.0
No	570	57.0
No Response	80	8.0
Total	1000	100.0

Source: Field Survey

Urban Transport System

The following table shows that 77 percent respondents accept that urban transport is not so well managed and proper. Only 12.8 percent respondents said that the transport system is well managed in the city. About 10.2 percent said that they don't have any idea regarding transport management system. The details are given in the following table.

Table 11: Urban Transport System

Category	Response	
	Number	Percent
Yes	770	77.0
No	128	12.8
No Response	102	10.2
Total	1000	100.0

Source: Field Survey

Traffic and Health Issues

Due to poor city transport management and maintenance the health problems are very common in the city dwellers and traffic personnel. The most important this is that 75.5 percent respondents accept that due to poor and heavy traffic there are so many health issues in the city. Whereas 19 percent said that there are no nay health issues in the city due to urban transport. 5.5 percent respondents have no nay ideas. The details are given in the following table.

Table 12: Traffic and Health issues

Category	Response	
	Number	Percent
Yes	755	75.5
No	190	19.0
No Response	55	5.5
Total	1000	100.0

Source: Field Survey

Migration

Migration is one of the major causes of urbanization and slum development. The given table shows that 65.4 percent respondents accept that urban growth is one of the causes of migration. Only 29 percent respondents said that the migration don't affect the urban growth. About 5.6 percent said that they don't have any idea regarding migration and its impact on urban growth. The details are given in the following table.

Table 13: Migration and its impact on Urban Growth

Category	Response	
	Number	Percent
Yes	654	65.4
No	290	29.0
No Response	56	5.6
Total	1000	100.0

Source: Field Survey

Slum is one of the fast growing problems of every big city. Every year number of labourers come city for getting employment and they settle in the slum areas of the city. Due to this migration slum area is also increasing day by day in the cities. The given table shows that 58.8 percent respondents accept that slum is one of the causes of migration. Only 17.6 percent respondents said that the migration don't affect the slum. About 23.6 percent said that they don't have any idea regarding migration and slum problem. The details are given in the following table.

Table 14: Migration and Slum Problem

Category	Response	
	Number	Percent
Yes	588	58.8
No	176	17.6
No Response	236	23.6
Total	1000	100.0

Source: Field Survey

Impact on Water

The water resources, indiscriminate use and mismanagement have caused resource degradation to the extent that the quality and quantity of available water has been affected. Shortage of water is experienced during winter months (November to March) and when we expect good quality water. The fast growing population has pressurized the food production base and to satisfy their need the people have misused the water resources. The region, though having sufficient water in aggregate, cannot boast of adequate quantities of water for its people at all places and during all the seasons. Population growth, caused water, land and environmental degradation and in many cases irreversible damage to water resources. The social sanctions and belief system maintained a balance between resource potential and their utilization for a long time, but with the increase in population and indiscriminate use of water resources, imbalance has been created. The important issue is to promote conservation and sustainable use of resources which allow long-term economic growth

The following table shows the increasing population and its impact on water. About 67.4 percent respondents reported that water resources are seriously affected by increasing population. Due to increasing population the demand of water is increasing in agricultural and domestic purposes. Only 25.5 percent respondents said that there is no any negative impact on water due to increasing population. Whereas 7.1 percent persons have not given any response or they don't know about the impact on water due to increasing population.

Table 15: Impact on Water

Category	Response	
	Number	Percent
Yes	674	67.4
No	255	25.5
No Response	71	7.1
Total	1000	100.0

Source: Field Survey

Declining Per Capita Forest Land and Agricultural Land

The population growth has resulted in a downward trend in per capita availability of forest and agricultural land. Per capita availability of forests in India is much lower than the world average. The growth of population is expected to be faster than hoped for improvements in forest cover as well as quality. Over the last ten years, despite governmental initiatives of joint forest management, tree growers' co-operative movements and other efforts tangible results are still to be observed, and forest depletion and degradation is still increasing. Similarly, the per capita availability of agricultural land in rural areas has decline consistently. About 75.6 percent people said that per capita forest land and agricultural land is decreasing due to increasing population. The details are given below.

Table 16: Declining Per Capita Forest Land and Agricultural Land

Category	Response	
	Number	Percent
Yes	756	75.6
No	144	14.4
No Response	100	10.0
Total	1000	100.0

Source: Field Survey

Changing Consumption Patterns

The economic and industrial development is inevitably accompanied by changing patterns of consumption. The number of registered motor vehicles in India provides one useful indicator of expanding consumption and economic growth. The increasing vehicles in country, producing more air pollution, fuel consumption, traffic jams and demands for road construction-often at the cost of agricultural land. The population of India in 2000 was just over 1 billion, and there were about 10 motor vehicles for every 1000 people, or a total of roughly 10 million motor vehicles in the country. In 2020, the population of India will be about 1.3 billion, and there will be about 44 motor vehicles for every 1000 people, making a total of 57 million vehicles (Energy Information Administration, 2001). An increase in vehicular pollution is associated with a number of environmental problems like air pollution and global warming. In most urban areas, air pollution has worsened due to traffic congestion, poor housing, poor sanitation and drainage and garbage accumulation. The environmental effects of fuels like oil and petroleum products are of growing concern owing to increasing consumption levels. In study area the numbers of all types of vehicles are increasing in rural and urban areas. This is also due to social symbol of having a vehicle. The people of study area reported that due to development environmental problems are also increasing. The situation is worst in urban area in comparison to rural areas. About 54.6 percent respondents agreed on this issue. About 25.7 percent respondents are not agreed upon this issue. The details are given below.

Table 17: Changing Consumption Pattern

Category	Response	
	Number	Percent
Yes	546	54.6
No	257	25.7
No Response	197	19.7
Total	1000	100.0

Source: Field Survey

Energy Demand

The environmental effects due to increasing consumption levels of fuels are of growing concern to various researchers. About 55.4 percent respondents agreed on this issue. The combustion of fuels in industries has been a major source of pollution. Coal production through open cast mining; its supply to and consumption in power stations and industrial boilers leads to particulate and gaseous pollution, which can cause pneumoconiosis, bronchitis and respiratory diseases. The bulk of commercial energy comes from the burning of fossil fuels viz. coal and lignite in solid form, petroleum in liquid form and gas in gaseous form. In addition to emission of greenhouse gases, the burning of fossil fuels has led to several ecological problems and associated with health problems like cancer risk, respiratory diseases and other health problems. Burning of traditional fuel adds a large amount of carbon-di-oxide into atmosphere and increases air pollution. The increasing population numbers and growing affluence have already resulted in rapid growth of energy production and consumption, and this trend can only be expected to accelerate in the future. A considerable amount of air pollution results from burning of fossil fuels. Moreover

the resources for fossil fuels are also limited thus exploration of alternate energy resources would provide the way out.

Table 18: Increasing Energy Demand

Category	Response	
	Number	Percent
Yes	554	55.4
No	340	34.0
No Response	106	10.6
Total	1000	100.0

Source: Field Survey

Effect on Health

The following table shows there is negative effect on the health through environmental pollution. About 72.5 percent respondents said that air pollution is affecting human health in negative sense. About 14.5 percent said that there is no any health impact due to air pollution. The details are given as below.

Table 19: Effect on Health

Category	Response	
	Number	Percentage
Yes	725	72.5
No	145	14.5
Don't know	130	13.0
Total	1000	100.0

Source: Field survey

Conclusion

The result of high population growth rates are increasing population density, increasing number of people below poverty line and pressure on natural resources which contributes to environmental degradation through over exploitation of natural resources. 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. It is high time that the general public, public entities, state and central government realize the damage, which our developmental process has made to the living environment. The extent is such that it cannot be resorted. There a necessity to think about the needs of present and future by compulsion and also need to balance the public interest and environment protection. It is to be noted that unless the humanity rises to the occasion for the prevention and control of the pollution and protection of environment with necessary zeal and speedy trial, the progressive and prosperous living and to procure welfare state will become a nightmare. Following suggestions are given for population and environment development of the study area on the basis of result of research work:

- Rapid population growth retards the economic, social and human development. Enhancement of women's status and autonomy has been conclusively established to have a direct bearing on fertility and mortality decline, which indirectly affects the population growth. More specifically, interrelationships between women's characteristics and access to resources are the mechanisms through which human fertility is determined
- The existing legal provisions are inadequate to control the enormous problems of environmental pollution of various types in the country. Therefore, the judiciary has to play a more active and constructive role. This has become all the more essential in view of the lack of awareness in the masses of the pollution problems; lack of planning and the plenty of the industries and the local bodies in this regard. New jurisprudential

techniques have to be devised to deal adequately with the problems of pollution control and protection of environment.

- Environmental law should be implemented effectively by adopting new instruments, mechanisms and procedures like environmental impact assessment and environmental audit and incorporate environmental objectives in manufacturing processes, minimum usage of hazardous materials and toxic chemicals, careful usage of toxic gases will reduce environmental load.
- Public interest litigation for protection of the natural environment should be permitted In view of the wider social interests affected by environmental pollution. Especially having regard to the peculiar socioeconomic conditions prevailing in the country where there is considerable poverty, illiteracy and ignorance obstructing and impending accessibility to the judicial process.

Finally, it can also be concluded the more research work can be conducted on the issue to identify the population and environmental problems and results should be considered for the further development and planning.

References

1. Acharya, Shankar (2004) "India's Growth Prospects Revisited". Economic and Political Weekly, Vol. 39, No. 41 (Oct. 9-15).
2. Bicknell, J, Dodman, D, and Satter thwaite, D (eds.) (2009) Adapting Cities to Climate Change, London and Sterling, VA, Earth scan.
3. Central Statistical Organisation, (2002) "Selected Socio-Economic Statistics", Ministry of Statistics and Programme Implementation, Government of India, New Delhi.
4. Central Statistical Organization. (2002) "Compendium of Environment Statistics", Department of Statistics, Ministry of Planning and Programme Implementation, Government of India, New Delhi.
5. Centre for Science and Environment, (1982) "Citizen's Report" The State of India's Environment, New Delhi).
6. Chaurasia Alok Ranjan, Gulati SC (2008) India: The State of Population 2007. National Population Commission and Oxford University Press, New Delhi,
7. Department of Agriculture and Cooperation, (2002) "Indian Agriculture in Brief", Directorate of Economics and Statistics, Ministry of Agriculture, Government of India, New Delhi.
8. Energy Information Administration, (2001) International Energy Outlook, U.S. Department of Energy, Office of Integrated Analysis and Forecasting, Washington, D.C.
9. Frauke, and Laumann, Gregor (2005) Science Plan: Urbanization and Global Environmental Change, Bonn, Germany, IHDP.
10. Government of India, (1997) Estimates of Poverty, Planning Commission, Government of India: Press Information Bureau, March 1997, New Delhi.
11. Human Development Report (2002) Deepening Democracy in a Fragmented World. New York and Oxford: Oxford University Press.
12. Montgomery, Mark R, Stern, Richard, Cohen, Barney, and Reed, Holly (2003) Cities Transformed: Demographic Change and Its Implications in the Developing World, Washington, DC, and National Research Council.
13. UNFPA and WEDO (2009) Climate Change Connections. A Resource Kit on Climate, Population and Gender.
14. World Commission on Environment and Development (1987) Our Common Future.
15. World watch Institute (2007) State of the World 2007: Our Urban Future, New York, W.W. Norton and Company.