



GROWING POPULATION AND THEIR ENVIRONMENTAL IMPACTS IN INDIA

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Abstract: The sum of surrounding living organism, which provides living condition and growth known as environment, on the other hand people found in a specific area known as its population. The present study analyse the relation between rapidly increasing population in India and declining environmental condition in India. It analyse the depressing pressure on limited natural resources in the country because of fast growing population. More people needs more food grains and Food grain crops needs more agriculture land, which causes deforestation, arable land, ground water depletion. Industrial mismanagement increasing Greenhouse gases impacts. Rapid growth of transportation, residential sector, urbanization and consumption of resources produce pollution (Air, Water, and Noise etc.), global warming and climate change on an alarming rate. This study aims to reflect the environmental impacts because of growing population in India.

Keywords: Population, Environment, Relation, Greenhouse.

Introduction

Population growth is an increasing phenomenon in the total number of peoples living in a recognized geographical area. The present-day population of the World is about to more than 7.5 billion and regularly increasing. Possibly it could be 8 billion till the year, 2025. In India, according to census 2011, more than 1210 millions of population were found. It has only 2.4 percent of the total geographical area of the earth surface while it contains 17 percent of the entire world's population and it continually increasing, which causes the pressure on natural resources such as produce soil degradation and agriculture problems, impacts the air and water qualities, damages the biodiversity and other environmental condition on a large scale. When the population grow hastily it is assumed that the environmental condition decline rapidly and its leading to specific environmental concern such as raising deforestation, pollution, degraded agriculture land, mismanagement of solid waste, global warming, climate change etc. mostly in developing countries. Because more people needs more resources like as agriculture lands, fresh water, fresh air, land uses (for residence, Industry, transport), forests for furniture and fuel etc. and it results in environmental depletion. All around the world, the uses of natural resources and their environmental impact are not equal. Developed life style leads to more consumption of resources and results in more environmental issues. For example, the United States is the largest producers of Carbon dioxide because of their industrial and socio-economic development, where consumption of natural resources is very high while it contains only five percent of the entire world's population.

So, we can say, environmental degradation and growing population are the most burning issue which is facing by the social scientists in the present world. It is very difficult to conceptualize relationship between population growth and environment (Chandana RC, 2008).

Population Growth in India

India has a very disappointed demographic history since the beginning of 20th century and its population increased at four folds in census 2011 than the census 1901. In the year 1901 it was 236 million of people while it found 1210 millions in the year 2011 (Table-1, Census of India, 2011). It could be divided in three phases such as decades during 1901 to 1921, 1921 to 1951 and after the year 1951. During the year 1901 to 1921 it recorded on a stagnant stage when death and birth rate was almost same (both more than 40, Table-2). In that period elevated death rate was the function of famines, food shortages and recurring epidemics. During the period of 1921 to 1951 population of India continually increased because many sectors such as agriculture, economy, medical facilities, and basic needs of life were improved slowly and a sharp decline were recorded in death rate.

| Table 1: Population Growth of India (1901-2011). | | |
|--|----------------------|---|
| Years | Population in Crores | Increasing % of Population(during preceding decade) |
| 1901 | 23.6 | |
| 1911 | 24.9 | + 5.7 |
| 1921 | 24.8 | -0.3 |
| 1931 | 27.6 | +11.0 |
| 1941 | 31.5 | +14.2 |
| 1951 | 36.0 | +13.3 |
| 1961 | 43.9 | +21.5 |
| 1971 | 54.8 | +24.8 |



| | | |
|------|-------|--------|
| 1981 | 68.5 | +24.99 |
| 1991 | 84.4 | +23.8 |
| 2001 | 102.8 | +21.5 |
| 2011 | 121.0 | +17.7 |

Source: Census of India, 2011.

The year 1951 was a demographic divide because after the year 1951 extraordinary hike was recorded in Indian population. On an average two percent of population growth were noted per year during this period (Chandana RC, 2008). There are various reasons for this variation in the trend of population growth rate in various censuses. The increase in population has been due to the improvement in health conditions and control of diseases.

Table 2: Natural rate of Population increase in India (1911-2011)

| Years | Birth rate per Thousands | Death rate per Thousands | Natural rate of increase |
|-------|--------------------------|--------------------------|--------------------------|
| 1911 | 49 | 43 | 06 |
| 1921 | 48 | 47 | 01 |
| 1931 | 46 | 36 | 10 |
| 1941 | 45 | 31 | 14 |
| 1951 | 40 | 27 | 13 |
| 1961 | 42 | 23 | 19 |
| 1971 | 37 | 15 | 23 |
| 1981 | 34 | 12 | 22 |
| 1991 | 31 | 11 | 20 |
| 2001 | 25 | 08 | 17 |
| 2011 | 17.7 | 7.1 | 10.6 |

Source: Census of India, 2011.

In the decade of sixties because of green revolution agriculture condition of food grain crops were improved and food supply by public distribution system was launched, medical facilities, water and sanitation availability, transportation system, markets, employment were managed and improved on a large scale which help in population growth. The decade between year 1971 to year 1981 approximate 25 percent of population growth rate were recorded which was the highest in Indian demographic history. After the year 1981, population growth rate of India regularly declining positively because of education and awareness to the population explosion.

Research Methodology

This research paper is based on the secondary data which is collected from the various publications such as Census of India, Socio-Economic Statistics; documents published by Ministry of Agriculture and other research papers, which are very much authentic sources. The data is tabulated manually and resulting calculation are summarized in the form of tables.

Objective

The objective of this study is to analyse the impacts of population growth on various aspects of environment, which is degraded continually and harm the living condition in India.

Discussion

Rapidly growing population and economic development emerging so many major environmental issues in India, including soil degradation, pressure on land and forest cover, loss of biome, changing land use pattern, raising energy demands, spread of pollution, water insufficiency and climate change etc. The deterioration of natural resources and unsafe living conditions affects the environment and health of the poor people.

Pressure on land and Vegetation Cover

India is a developing country with second largest population of the world. It has forty three percent of its area under cultivation, which shows a very high pressure on agriculture land in percentage in comparison of any other country. Table 3 shows the land utilization pattern in India from the year 1951 to 2013-14. In last six decades India's population increased more than three times while total cultivated area increased only twenty percent, mostly it is taken from the forest cover and pasture lands. In spite of land expansion, the available land for agriculture is not sufficient to feed the population. According to table 3 the net sown area has increased on a large scale till the year 2001, while during the last decades it represents a stagnant phase. The cropping intensity shows



a high ratio because of better utilization of irrigation, chemical fertilizers, pesticides and insecticides. These resulting in water logging, soil degradation, damage of biodiversity.

The national forest policy has a target of thirty three percent of total geographical area under forest cover land. While India has 17 percent of the entire's world population with approximate 2 percent of the entire world's forest cover. Forests play an important part in the development of industries, economy, agriculture, in environmental condition, in healthy life style and generating employment. It maintains ecological balance, check soil degradation make them fertile for agriculture, help in water cycle balance, save earth from global warming and climate change. Forests are an important natural resource of India. They play an important role in providing raw materials to industries and generating income and employment. Forests also play an important role in enhancing the quality of environment by influencing the ecological balance and life support system (checking soil erosion, maintaining soil fertility, conserving water, regulating water cycles and floods, balancing carbon dioxide and oxygen content in atmosphere etc. They have moderate influence against floods and thus they protect the soil erosion. While the growing population a declining trend in per capita availability of forest cover and agriculture in India (Table-4) in second half of 20th century. The forest cover is regularly decreasing while the population of country regularly increasing, which cause needs of agriculture land and damage the forest cover for crops.

Table 3: Land Use Patterns in India, 1951- 2014. (million hectares).

| Classification | 1950-51 | 1960-61 | 1970-71 | 1980-81 | 1990-91 | 2000-2001 | 2013-2014 |
|---|---------|---------|---------|---------|---------|-----------|-----------|
| Geographical Area | 328.7 | 328.7 | 328.7 | 328.7 | 328.7 | 328.7 | 328.7 |
| Reporting Area for land utilization statistics (1 to 5) | 284.32 | 298.46 | 303.76 | 304.15 | 304.86 | 306.01 | 307.48 |
| 1. Forests | 40.48 | 54.05 | 63.91 | 67.47 | 67.8 | 69.02 | 71.83 |
| 2. Not available for cultivation (a+b) | 47.52 | 50.75 | 44.64 | 39.62 | 40.48 | 42.41 | 43.86 |
| (a) Non-Agricultural Uses | 9.36 | 14.84 | 16.48 | 19.66 | 21.09 | 22.97 | 26.91 |
| (b) Barren and Unculturable land | 38.16 | 35.91 | 28.16 | 19.96 | 19.39 | 19.44 | 16.95 |
| 3. Other Uncultivated Land (excluding fallow land) (a+b+c) | 49.45 | 37.64 | 35.06 | 32.31 | 30.22 | 28.49 | 25.83 |
| (a) Permanent Pasture and other grazing land | 6.68 | 13.97 | 13.26 | 11.97 | 11.4 | 11.04 | 10.26 |
| (b) Land under Miscellaneous tree crops and grooves not included in net area sown | 19.83 | 4.46 | 4.3 | 3.6 | 3.82 | 3.62 | 3.19 |
| (c) Culturable Wasteland | 22.94 | 19.21 | 17.5 | 16.74 | 15 | 13.83 | 12.39 |
| 4. Fallow Land (a+b) | 28.12 | 22.82 | 19.88 | 24.75 | 23.36 | 24.91 | 24.85 |
| (a) Fallow land other than current fallows | 17.44 | 11.18 | 8.76 | 9.92 | 9.66 | 10.11 | 10.69 |
| (b) Current Fallows | 10.68 | 11.64 | 11.12 | 14.83 | 13.7 | 14.8 | 14.15 |
| 5. Net area sown | 118.75 | 133.2 | 140.27 | 140 | 143 | 141.23 | 141.43 |
| 6. Gross cropped area | 131.89 | 152.77 | 165.79 | 172.63 | 185.74 | 189.74 | 200.86 |
| 7. Area sown more than once | 13.14 | 19.57 | 25.52 | 32.63 | 42.74 | 48.51 | 59.43 |
| 8. Cropping intensity* | 110.1 | 114.7 | 118.2 | 123.3 | 129.9 | 134.30 | 142 |
| III Net irrigated area | 20.85 | 24.66 | 31.1 | 38.72 | 47.78 | 57.24 | 68.10 |



| | | | | | | | |
|-------------------------|-------|-------|-------|-------|-------|-------|-------|
| IV Gross irrigated area | 22.56 | 27.98 | 38.19 | 49.78 | 62.47 | 76.34 | 95.77 |
|-------------------------|-------|-------|-------|-------|-------|-------|-------|

Source: Selected Socio-economic Statistics, 2017

| Year | Per capita Availability of Forest Land (in hectare) | Per capita Availability of Agricultural land in rural areas (in hectare) |
|---------|---|--|
| 1950-51 | 0.113 | 0.638 |
| 1960-61 | 0.124 | 0.503 |
| 1970-71 | 0.115 | 0.410 |
| 1980-81 | 0.099 | 0.356 |
| 1990-91 | 0.081 | 0.315 |
| 1998-99 | 0.071 | 0.271 |

Source: Selected Socio-Economic Statistics, India 2002.

Mounting Exploitation of Energy Resources

The increasing consumption of energy resources like coal, lignite, natural gas, crude oil, electricity etc., effects environment condition and gain concern to the research scholars. The combustion of these fuels in industries has been a major source of pollution. The production of coal energy and lignite has increased from 32.2 million tons in 1950-51 to 313.70 million tons in 2000-2001, an increase of 9.74 times. The production of petroleum products registered an increase of 29 times, from 3.3 million tons in 1950-51 to 95.6 million tons in 2000-2001 (Ray and Ray 2011). Table-5 represents the regularly growing consumption of energy resources in India. Industrial and economic developments are the main causes of this consumption and produce pollution. The burning of fossil fuel causes greenhouse gases and many ecological problems associated with health and environmental issues such as Air and water pollution.

| Year | Coal | Lignite | Crude Petroleum* | Natural Gas | Electricity | Total |
|---|-------|---------|------------------|-------------|-------------|-------|
| 2007-08 | 7608 | 394 | 6536 | 1533 | 1807 | 17878 |
| 2008-09 | 8315 | 362 | 6731 | 1533 | 1994 | 18936 |
| 2009-10 | 8856 | 391 | 7811 | 2144 | 2206 | 21408 |
| 2010-11 | 8925 | 429 | 8248 | 2357 | 2500 | 22458 |
| 2011-12 | 9723 | 476 | 8547 | 2299 | 2827 | 23872 |
| 2012-13 | 10421 | 523 | 9178 | 2038 | 2967 | 25128 |
| 2013-14 | 10957 | 499 | 9316 | 1836 | 3147 | 25755 |
| 2014-15 | 12435 | 534 | 9347 | 1859 | 3415 | 27589 |
| 2015-16 | 12660 | 480 | 9750 | 1843 | 3604 | 28337 |
| 2016-17 | 12733 | 491 | 10261 | 1956 | 3839 | 29279 |
| Growth rate of 2016-17 over 2015-16 (%) | 0.58 | 2.24 | 5.24 | 6.12 | 6.50 | 3.32 |

Source: Energy Statistics 2018.

Loss of biodiversity

Human beings harm the environment and modify their biogeochemical phenomena, while biodiversity is an important agent to balance the all-ecological problems such as pollution consumption, protecting ecosystem, restore nutrients to soil and, help in forestation, recharge water resource and balancing the climate (Chopra R, 2016). All over the world more than one thousands of animal species are threatened with the extinction rate of one per year, while twenty thousand of flowering plants thoughts to be at risk (Compendium of Environment Statistics, 2000), Human settlements, increasing demand of land for agriculture, modernization of agriculture, mining, transport and communication networks are the main causes for this.

Urbanization stress in India

After independence India recorded a faster rate of urbanization. According to 1901 statistics, India had 11.4 percent of population in urban territories (Chopra R, 2016). This figure expanded to 31.14 percent (Table-6) according to 2011 evaluation. World Population report in 2007 indicated that by year 2030, 40.76 percent of nation's population is required to stay in urban zones. Poor conditions of health structure, employment, lack of opportunities are the leading agent of the villagers shifting to urban areas. In search of better living standard and earnings many families move towards urbanization. Such kind of rapid and unstructured expansion



of population in urban areas has brought degradation to urban form. These results in stress on air and water qualities, sewerage problems, the expansion of slums and bothersome land utilize changes, all of these add to urban poverty.

| Years | Urban Population in percentage |
|-------|--------------------------------|
| 1951 | 17.29 |
| 1961 | 17.97 |
| 1971 | 19.90 |
| 1981 | 23.34 |
| 1991 | 25.70 |
| 2001 | 27.82 |
| 2011 | 31.16 |

Source: Office of Registrar General, India.

Pollution and Global warming

Many part of the country counted in most polluted areas of the world. Air conditions of the metropolitan cities in India recorded highly polluted such as National capital region mainly in Delhi where air quality in the months of winter season becomes harmful for the human health and people suffers mainly from respiratory damage, heart and lung diseases. Suspended particle of the construction material, burning agriculture wastages, consumption of petroleum and fossil fuel in industries and transport combined impact to the environment and make it critical for human health. Chemical fertilizers pollute the soil and water, and in the cities, the air is infected with lead from transportation exhaust. The disease due to suspended particulate matter in the air in mega cities like, Delhi, Mumbai, Chennai and Calcutta have risen significantly (Brandson and Honmon, 1992).

Most of the available water is used for agriculture and livestock and only one-fifth of the water is used for domestic consumption and industries. The amount of water access per person has declined regularly because of rapidly population growth. Industrial wastages and domestic savages and chemical fertilizers in agriculture system are the main causes of water pollution. The diseases commonly caused due to polluted water are cholera, diarrhea, hepatitis, typhoid amoebic and bacillary, dysentery, guinea worm etc. (Ray and Ray 2011).

The blind consumption of energy resources in economic growth and industrial development for the fast-growing population of the world become the reason of global warming. Global warming have major impacts on environmental and socio-economic situations, which can change physical phenomena like delay in agriculture pattern, forestry, wetlands and fisheries with rising temperature and heat stress. The increasing temperature and heat stress create more health issues to human population; dislocate the residence and causes shifting to another area. All these would have significant socio-economic consequences (Compendium of environment statistics, 2000).

Conclusions

The rapidly growing population and their increasing density results in stress on natural resources such as land, soil, forest, biome, water and air qualities etc. which become the causes of environmental degradation. Fast growing population contributes in exploitation of resources. This study represents that rapid population growth contribute to high rate of consumption of energy resources, pressure on land utilization, declining pure water access to the people, increasing air pollution, deforestation, global warming because of various reasons. The poor economy or social structure put burden on environment and throw it in degradation. However, environmental pollution not only leads to deteriorating environmental conditions but also have adverse effects on the sustainable development and health of people.

The protection of the environment is not the duty of administration alone, but society also should make leading efforts to clean and protect them. There is a need to improve social awareness to implement the curative measures to control pollution due to chemical and agriculture wastes, due to pesticides, due to industrial wastages, due to domestic savages and preserve forestation, preserve river systems etc.

In addition, there is an urgent need to make steps on mismanagement of economy, urgent need to control the population growth and protection of natural resources for a healthy environment to healthy human beings.



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