

The Population Economic Growth on Environmental Degradation in India

Dr. R. SEENIVASAN

Asst. Professor, Dept of Mathematical Economics, School of Economics, M.K.University, Madurai – 625 021

**Corresponding Author:* Dr. R. SEENIVASAN, Asst. Professor, Dept of Mathematical Economics, School of Economics, M.K.University, Madurai – 625 021

ABSTRACT

The Research paper in Rapid population growth in a country like India is threatening the environment through expansion and intensification of agriculture, uncontrolled economic growth of urbanization and industrialization, and destruction of natural habitats. The present paper is an attempt to study the population change and its impacts on land, forest and water and energy resources. Rapid population economic growth plays an important role in declining per capita agricultural land, forest and water resources. The analysis reveals that outcomes of high population economic growth rates are increasing population density and number of people below poverty line. Population pressure contributes to land degradation and soil erosion, thus affecting productive resource base of the economy. The increasing population numbers and growing affluence have resulted in rapid economic growth of energy production and consumption in India. The environmental effects like ground water and surface water contamination; air pollution and global warming are of growing concern owing to increasing consumption levels. The paper concludes with some policy reflections and emphasizes the potential importance of natural resources.

Keywords: Population, India, Economic Growth, Environment, Degradation, Resource, Consumption, Economy

INTRODUCTION

The rapid population economic growth and economic development in country are degrading the environment through the uncontrolled growth of urbanization and industrialization, expansion and intensification of agriculture, and the destruction of natural habitats. One of the major causes of environmental degradation in India could be attributed to rapid economic growth of population, which is adversely affecting the natural resources and environment. The economic growing population and the environmental deterioration face the challenge of sustained development without environmental damage. The existence or the absence of favorable natural resources can facilitate or retard the process of economic development.

The three fundamental demographic factors of births, deaths and migration produce changes in population size; composition, distribution and these changes raise a number of important questions of cause and effect. Population Reference Bureau estimated the 6.14 billion world's population in mid 2001. Contribution of

India alone to this population was estimated to be 1033 millions. It is estimated that the country's population will increase to 1.26 billion by the year 2016. The projected population indicates that India will be a first most populous country in the world and China will be second in 2050 (Population Reference Bureau, 2001). The increase of population has been tending towards alarming situation. India is having 18 percent of the world's population on 2.4 percent of its land area has great deal of pressure on its all natural resources. Water shortages, soil exhaustion, deforestation, air and water pollution afflicts many areas. If the world population continues to multiply, the impact on environment could be devastating. As the 21st century begins, growing number of people and rising levels of consumption per capita are depleting natural resources and degrading the environment. The poverty-environmental damage nexus in India must be seen in the context of population growth as well. The pressures on the environment intensify every day as the population grows. The rapid increase of human numbers combines with desperate poverty and rising levels of consumption are

depleting natural resources on which the livelihood of present and future generations depends. Poverty, is amongst the consequences of population growth and its life style play major role in depleting the environment either its fuel demands for cooking or for earning livelihood for their survival. The unequal distribution of resources and limited opportunities cause push and pull factor for people living below poverty line that in turn overburdened the population density in urban areas and environment get manipulated by manifolds, consequently, urban slums are developed in urban areas.

The growing trends of population and consequent demand for food, energy, and housing have considerably altered land-use practices and severely degraded India's forest vis-à-vis environment also. The growing population put immense pressure on land extensification at cost of forests and grazing lands because the demand of food could not increase substantially to population. Thus, horizontal extension of land has fewer scopes and relies mostly on vertical improvement that is supported by technical development in the field of agriculture i.e. HYV seeds, Fertilizers, Pesticides, Herbicides, and agricultural implements.

All these practices causing degradation and depletion of environment with multiplying ratio. The relationship between population growth, resource depletion and environmental degradation has been a matter of debate for decades. The argument has been between those who view population numbers per se as the main culprit in increasing pressure on the environment and those who place more blame on economic development, non sustainable agricultural and industrial practices, and excessive and wasteful consumption. In fact, both population growth and non- sustainable development are cause for concern in India.

Though the relationship is complex, population size and growth tend to expand and accelerate these human impacts on the environment. What is more concern, the number of population rise will increase to such an extent in future that it will cause overall scarcity for resources. Decades of economic expansion and population growth have degraded its land, air and water. The present paper examines the relationship of man to the environment and with growing population, poverty and urbanization the environment is degrading.

Population Growth in India

India is the second most populous country in the world after China. Recently, the population of India has crossed the one billion marks. According to the Census of India 2001, the population of India on 1st March 2001 was 1027 millions. At the time of independence, the country's population was 342 million. The number has multiplied three-fold in around five decades. The population growth of India from 1951 to 2001 is presented in Table 1. The total population size of India had grown from 361 million in 1951 to around 1027 million in 2001. The population of India increased by three times during the period of 1951-2001. The rural population of India has increased around two and half times from 298.7 million to 741.7 million during 1951-2001, whereas the urban population has grown 4.6 fold from 62.4 million in 1951 to 285.3 million in 2001. The decadal growth rates of the population are irregular, as it increased from 13.31 percent in 1951 to 24.8 percent in 1971. It declined to 24.7 percent in 1981, 23.8 percent in 1991 and 21.35 percent in 2001. The rural decadal growth rate of population varies from 8.79 percent in 1951 to 17.97 percent in 2001, whereas the urban decadal growth rate of population varies from 41.43 percent in 1951 to 31.11 percent in 2001. 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. The density of population has gone up from 117 in 1951 to 312 persons in 2001 and it always shows an increasing trend over the census years in persons per square kilometer. Several push and pull factors are presumed to be operative towards distress out migration from rural to urban areas. This might be due to the declining resource availability per capita and shrinking economic opportunities in rural areas, and better economic opportunities, health and educational facilities etc. in urban areas, providing opportunities for higher level of human capital development could be the underlying factors for rural out migration.

Vital Rates in India

The Economic growth of population depends upon fertility, mortality and migration. The process of accelerated population growth in India till 1970s were observed to witness a marginal deceleration during 1980s, as the decadal population growth was 23.9 percent compared to 24.9 percent in 1970s. Further

declines in fertility have been witnessed during 1990s and 2000s. The estimated birth, death, natural growth, infant mortality and total fertility rates in India is presented in Table 2. It is revealed from table that birth rate in India has declined from 33.9 per thousand populations in 1981 to 29 per thousand populations in 1991 and it further declined to 25 per thousand populations in 2001. At the same time crude death rate has also declined from 12.5 per thousand populations in 1981 to 9.8 per thousand populations in 1991 and it further declined to 8 per thousand populations in 2001. Thus, the natural growth rate of India's population has declined from 21.4 percent in 1981 to 17 percent in 2001. The Total fertility rate has also declined from 4.5 children per women in 1981 to 3.1 children per women in 2001. Infant Mortality Rate (IMR) per thousand in India has steadily declined from 110 in 1981 to 72 in 1991 but the IMR (66) in 2001 is still very high.

Trends in Poverty and Its Environmental Effects in India

Most of India's poor live in rural areas and are engaged in agriculture. India's poverty reduction through the anti-poverty and employment generation programmes along with overall economic growth planning efforts has helped to reduce the poverty ratio in the country. The trends in poverty in India are depicted in Table 3. The people below poverty line declined from 55 percent in 1973 to 26 percent in 1999-2000. The absolute number of poor have, however, declined from 320 million in 1973-74 to 260 million in 1999-2000. During the same period the fraction of population below poverty line dropped from 56.4 percent to 27.1 percent in rural areas and from 49 percent to 23.6 percent in urban areas. Over the period 1987-88 to 1999-2000, urban and rural poverty declined but more declines has been experienced by urban area.

Poverty is said to be both cause and effect of environment degradation. Poorer 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. It also contributes to environmental degradation through over exploitation of natural resources like land, air and water. Population pressure driven overexploitation of the surface and underground water resources by the poor has resulted into contaminate on and exhaustion

of the water resources. Urban population is also using rivers to dispose of untreated sewage and industrial effluent. The result is that health of those dependents on untreated water resources is increasing at risk. Moreover degraded environment can accelerate the process of impoverishment, again because the poor depend directly on natural assets. The poverty and rapid population growth are found to coexist and thus seems to reinforcing each other. Poverty also affects the demographic characteristics of the population and hinders the transition to slower population growth. Acceleration in poverty alleviation is imperative to break this link between poverty and the environment. The deterioration of natural resources and unsafe living conditions affects the environment and health of the poor people.

Environmental Challenges

Population growth and economic development are contributing to many serious environmental problems in India. These include pressure on land, land/soil degradation, forests, habitat destruction and loss of biodiversity, changing consumption pattern, rising demand for energy, air pollution, global warming and climate change and water scarcity and water pollution.

Pressure on Land

India faces the most acute pressure on agricultural land. Today every million hectares of land supports 7.27 million people. Forty three percent of the land is under cultivation, one of the highest in the world. A change in land utilization pattern implies an increase or decrease in the proportion of area under different land uses at a point in two or more time periods. Table 4 describes the land utilization pattern in India from 1951 to 2001. Over the past fifty years, while India's total population increased by about 3 times, the total area of land under cultivation increased by only 20.27 percent from 118.75 million hectares in 1951 to 142.82 million hectares in 2001. Most of this expansion has taken place at the expense of forest and grazing land. Despite past expansion of the area under cultivation, less agricultural land is available to feed each person in India. It shows variations in land use and a narrow range of fluctuations in the proportion of net sown area to total land in the country since 1951 to 2001. Out of total geographical area of 329 million hectares, only 306 million hectares is the reporting area (the rest being un administered for various reasons). The land for non-agricultural uses (housing, industry and

others) is increased from 9.36 million hectares in 1951 to 22.97 million hectares in 2001. More than 19.4 million hectares are snow bound and remote leaving only 237 million-hectare for agriculture, forestry, pasture and other biomass production. The area under cultivation had increased by about 30 percent until 1981 and thereafter depicts marginal decline. The net sown area increased from 119 million hectares in 1950-51 to 140 million hectares in 1970-71 mostly through reclamation of old fallow and culturable wastelands and diversion of groves. The net area sown has increased only marginally from 140 million hectares in 1970-71 to 141 million hectares in 2000-2001, indicating that the private efforts have peaked and the intervention of the Government is required for further land reclamation. The extent of agricultural intensification and extensification characterized by increase in cropping and irrigation intensity and higher use of chemical fertilizers, pesticides and insecticides. The process of agricultural extensification and intensification is leading to land degradation, overexploitation of underground water resources, increased use of chemical fertilizers leading to eutrophication and water pollution. Agricultural intensification because of increasing cropping intensity, irrigation intensity and excessive use of chemical fertilizers resulting into water logging, salinization and alkalization of croplands and eutrophication of water bodies and ill health of oceans and thus reductions in biodiversity.

Land/Soil Degradation

Direct impacts of agricultural development on the environment arise from farming activities, which contribute to soil erosion, land salination and loss of nutrients. The spread of green revolution has been accompanied by over exploitation of land and water resources and use of fertilizers and pesticides have increased many folds. Shifting cultivation has also been an important cause of land degradation. Leaching from extensive use of pesticides and fertilizers is an important source of contamination of water bodies. Intensive agriculture and irrigation contribute to land degradation particularly salination, alkalization and water logging. It is evident that most of the land in the country is degrading, thus affecting the productive resource base of the economy. Out of the total geographical area of 328.7 million hectares, 175 million hectares are considered to be land-degraded area (Table 5). Water and wind

erosion is the major contributor of 141.3 million hectares to soil erosion, with other factors like water logging 8.5 million hectares, alkali soil 3.6 million hectares, acid soil 4.5 million hectares, saline soil including coastal sandy areas 5.5 million hectares adding to the situ degradation. While soil erosion by rain and river in hill areas causes landslides and floods, deforestation, overgrazing, traditional agricultural practices, mining and incorrect siting of development projects in forest areas have resulted in opening up of these areas to heavy soil erosion. Ravines and gullies reported 4 million hectares; area subject to shifting cultivation reported 4.9 million hectares and riverine and torrents erosion due to floods and eutrophication due to agricultural runoff reported 2.7 million hectares. The increasing intensification and extensification also results in salination, alkalization and water logging in irrigated areas of the country. For achieving and maintaining food security, sustainable forestry, agricultural and rural developments controlling of land/soil erosion is very much necessary.

Forest Resources

With less than 2 percent of the world's total forest area, the country supports 18 percent of its population. The total area under forests was 675.54 thousand square kilometers in 2001, which was 21 percent of the total geographical area, as against the National Forest Policy 1988 stipulation of a target of 33 percent. Even within this recorded area, only 416.81 thousand square kilometers, or only 12.68 percent of country's total land area, comprises dense forest with a crown density of more than 40 percent, thus reflecting a qualitative decline of forests in the country.

The comparative situation of forest cover in India is given in Table 6. Overall, the total forest cover had been increased by 35.43 thousand square kilometers (Sq. Kms.) from 640.11 thousand Sq. Kms. in 1993 to 675.54 thousand Sq. Kms. in 2001. In the year 2001, as compared to 1999, the total forest cover had increased by 38.24 thousand Sq. Kms. The states which shown significant increase in forest covers are Bihar, Himachal Pradesh, Karnataka, Tamil Nadu, Gujarat, Maharashtra, Punjab, West Bengal and Rajasthan. However, it has increased in 1999 by 3.90 thousand Sq. Kms. as compared to 1997. In the year 1997, as compared to 1993, the total forest cover has decreased by 6.71 thousand Sq. Kms. The states, which have shown significant decline in

the forest covers, were Andhra Pradesh and Madhya Pradesh. Whereas the states of Gujrat, Maharashtra, Rajasthan and West Bengal have shown an increase in forest cover.

To regulate unabated diversion of forestland for non-forestry purposes, Forest (Conservation) Act, 1980 was enacted. It has resulted in reduction of diversion of forest area for non-forestry purposes considerably and the present rate of diversion is 16,000 hectare annually (Economic Survey of India, 1998-99). 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.

Policy Implication

From the various effects of human beings on environmental degradation, discussed in this paper, it appears that if human beings want to exist on earth, there is now high time to give top priority to protect natural resources and environment. The creation of employment opportunities is essential in agricultural areas with high poverty, unemployment and landlessness. Poverty also affects the demographic characteristics of the population and hinders the transition to slower population growth. There is a need to control poverty and population growth below replacement level in the country. Unless significant measures are taken to incorporate environmental concerns into agricultural development, urban planning, technological innovations, industrial growth, and resource management, the situation is likely to worsen in the future. There is a need control pollution of all types for a healthy living. Special efforts should be made for informing and educating the people and local leaders about the adverse effects of large population through specially designed Information, Education and Communication (IEC) activities. In order to increase green cover and to preserve the existing forests, a forestation and social forestry programmes should be implemented at the local level. There is a need for preventive and curative measures to control water pollution due

to chemical fertilizers, pesticides and other wastes. Wastewater treatment plants should be established in accordance with the need of time and its usage should be encouraged. The heavy penalty should be imposed on industries disposing off the wastes into the river. Moreover, the landfills are to be properly managed to prevent ground water contamination. More emphasis should be laid on compulsory environmental education at the school level in order to make people aware of the environment protection. 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.

CONCLUSION

The outcomes of high population growth rates are increasing number of people below poverty line, an increasing population density, and pressure on natural resources. The study reveals that the country's population growth and poverty is imposing an increasing burden on the country's limited and continually degrading natural resource base. The natural resources are under increasing strain, even though the majority of people survive at subsistence level. It will increasingly difficult to satisfy the basic needs of a growing population even at present levels of consumption, and the situation will deteriorate progressively as the per capita consumption of resources increases. Population pressure on arable land contributes to the land degradation, thus affecting the productive resource base of the economy. The increasing population numbers and growing affluence have already resulted in rapid growth of energy production and consumption in India and this trend can only be expected to accelerate in the future. The environmental effects like air pollution and global warming are of growing concern owing to increasing consumption levels. However, environmental pollution not only leads to deteriorating environmental conditions but also have adverse effects on the sustainable development and health of people. The considerable amount of both ground water and surface water contamination due to chemical fertilizers and insecticides in the country leads to various water borne diseases. The growth of population is a fundamental factor in its relationship to natural resources, environment and technology. To sum up, there is an urgent need to control population and poverty, conserve and protect natural resources and the environment for healthy human beings.

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