



## ORIGINAL RESEARCH PAPER

Economics

ENVIRONMENTAL DEGRADATION AND POLLUTION  
IN TIRUPATI, CHITTOOR DISTRICT, ANDHRA  
PRADESH

KEY WORDS:

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## ABSTRACT

Population explosion, increased industrialization rapid urbanization and intensive agriculture have caused tremendous change and damage to the environment. The most striking reason of the environmental degradation and hence global environmental crisis is the fast deteriorating relationship between man and environment become of rapid rate of exploitation of natural resources, technological development and industrial expansion. Industrial towns and cities often cause poisonous killer urban smog due to trapping of pollutants mainly smoke and sulphur dioxide spewed from the chimneys of the mills by stagnant air during inversion of temperature. Increasing urbanization also modifies the water budgets of surface water as well ground water.

## INTRODUCTION

Population explosion, increased industrialization rapid urbanization and intensive agriculture have caused tremendous change and damage to the environment. Man's ignorance of laws of nature and his overexploitation of natural resources have further aggravated the problem. Uncontrolled mechanization, overexploitation of natural resources deforestations and extensive use of chemical fertilizers and pesticides have brought about many changes in different components of the environment. On the other hand, nature has been striving hard to compromise with man and bear the onslaught of his activities.

Environmental degradation is the deterioration of the environment through depletion of resources such as air, water and soil; the destruction of ecosystems and the extinction of wildlife. It is defined as any change or disturbance to the environment perceived to be deleterious or undesirable.<sup>[1]</sup> The United Nations International Strategy for Disaster Reduction defines environmental degradation as "The reduction of the capacity of the environment to meet social and ecological objectives, and needs".<sup>[2]</sup> Environmental degradation means overall lowering of environmental qualities because of adverse changes brought in by human activities in the basic structure of the components of the environment to such an extent that these adverse changes adversely affect all biological communities in general and human society in particular. Environmental degradation leaves direct impact on the ecology and thus is caused ecological imbalance because of marked education in the ecosystem and ecological diversity. Ecological imbalance is the indicator of environmental degradation and the adverse effects of it are easily observable in biological communities<sup>3</sup>.

## CAUSES OF ENVIRONMENTAL PROBLEMS AND DEGRADATION

The 'environmental crises caused due to environmental and ecological changes are the result of developmental processes of the 'economic and technological man' of the past century. In fact, if the past century was marked by socioeconomic, scientific and technological development of the one hand, it was plagued by serious problems of environmental problems of the other hand. The environmental crisis arising out of the environmental degradation/deterioration caused by several forms of pollution, depletion of natural resources because of rapid rate of their exploitation and increasing dependence on energy consuming and ecologically damaging technologies, the loss of habitats due to industrial, urban and agricultural expansion, reduction and loss of ecological populations due to excessive use of toxic pesticides and herbicides and loss of several species of plants due to practice of monoculture and removal of habitats through forest clearance has now become of global concern. The life of common man is being so rapidly adversely affected by environmental degradation caused by man himself that there has been a marked growth of interest within the last decade in the quality of environment, the disruption of the earth's natural ecosystems and the depletion of resources. Pollution, ecology and environment have been projected from the cloistered world of

science into the forefront of public debate, and all aspects of man's use of his environment have been widely discussed with passionate interest<sup>4</sup>.

The most striking reason of the environmental degradation and hence global environmental crisis is the fast deteriorating relationship between man and environment become of rapid rate of exploitation of natural resources, technological development and industrial expansion. The rate of environmental change and resultant environmental degradation caused by human activities has been so fast and widespread that the human race is like an ape with a handgrenade<sup>5</sup>. Nobody can say when he will pull the pin of the grenade and the whole world will be destroyed (in case of breaking out of nuclear war).

## Environmental degradation the and resultant environmental crisis

The following reasons have been recognized<sup>6</sup> for environmental degradation the and resultant environmental crisis:

- Accelerated growth of production potential.
- Accelerated rate of scientific and technological discovery and development.
- Exponential increase in population.
- Exponential growth in human population,
- Accelerated pace of scientific and technological development,
- Ambitious development projects aimed at fast economic development,
- Fast expanding industries, sprawling urban growth and agricultural development,
- Philosophical and religious outlook of the society,
- Unfriendly behaviour of man with the natural environment,
- Ignorance and lack of environmental perception and lack of public awareness towards environmental problems,
- Economic poverty,
- Affluence and richness,
- Unscientific and illogical exploitation and utilization of natural resources etc.

The impact of man on environment through his economic activities are varied and highly complex as the transformation or modification of one natural condition and process leads to a series of changes in the biotic and biotic components of the environment. The impacts of man on environment fall into two categories, viz. (i) direct or intentional impacts, and (ii) indirect or unintentional impacts. Direct or intentional impacts of human activities are pre-planned and premeditated because man is aware of the consequences, both positive and negative, of any programme which is launched to change or modify the natural environment for economic development of the region concerned. The effects of direct anthropogenic changes in the environment are noticeable within short period and these effects are reversible because both before and after studies of possible effects may enable the man to set the negative defects right to certain extent if so desired and intended. On the other hand, the indirect impacts of human activities on the environment are not premeditated and pre-planned and these impacts of human activities on the

environment are directed to accelerate the pace of economic growth, especially industrial development. The indirect effects of human economic activities may change the overall natural environmental system and the chain effects sometimes degrade the environment to such an extent that this becomes suicidal for human being.

### **Economic deterministic view point**

The 'economic deterministic view point' of the nature and the environment is also based on the basic ideology of man's mastery over environment and continued economic and industrial expansion through the application of modern technologies. 'The basic thesis of the growth (affluence) school is that because economic growth is required for political social and economic stability, the 'quality of environment' normally assumes lower priority in formulating planning proposals and in long-term planning because the deterioration of the environment is generally protracted and socially less oblique than a deterioration in the economy'<sup>4</sup>. In fact, 'economic determinism' is based on two fallacious assumptions viz. (i) there are positive correlation between the population of a given region and the level of economic development and activity in that region, and (ii) the interactions of people, resources and society are governed by universal economic principle'<sup>7</sup>. Based on these two fallacious assumptions the economic determinism' believes in man's ability to environmental problems arising out of contented economic growth and industrial expansion. It any be pointed out that this exploitation of natural sources in the western developed countries and their colonies in Third World Countries and thus has created most of the environmental and ecological problems of global dimension. The 'ecological viewpoint' of the nature and the environment considers man as an integral part of the nature/environment and emphasizes symbiotic relationship between man and environment. In fact, this view point states that there should be harmony and not hostility between man and nature. This view point also lays emphasis on wise and restrained use environmental management programmes, policies and strategies based on ecological principles i.e. at rational exploitation of natural resources and optimum utilization of natural resources.

### **Population growth and environmental degradation**

To most of the people growth the human population at alarming rate is most significant cause of the lowering of environmental quality and ecological balance. In fact, there are conflicting ideas and views regarding the exact principal cause of environmental degradation wherein the lowering of environmental quality and ecological imbalance have been assigned to overpopulation, or to the failures of the social system or to modern technologies. The pro-population school is of the opinion that the growth of world population at exponential rate is the only reason of environmental degradation while other reasons are offshoots of the factors of over population. For examples, industrial expansion, urban growth agricultural development, increase in means of transport and communication etc. are the results of population growth because the people must generate better facilities for their existence and better life. The development of scientific techniques and advanced technologies has to be done in order to save the humanity from hunger and natural calamity and disaster. Thus it is obvious without doubt the overpopulation is the root cause of environmental degradation and ecological imbalance.

### **URBANIZATION AND ENVIRONMENTAL DEGRADATION**

Increasing concentration of population in urban centres and origin and expansion of new urban centres due to industrial expansion and development are responsible for rapid rate of exploitation of natural resources and several types of environmental degradation and pollution in the developed and developing countries. The level of urbanization in the developed countries of the world has already reached its peak. The accumulation of wealth and availability of more economic and job opportunities in the urban centres have resulted into the concentration of population in the congested metropolitan areas and thus the formation and growth of big slum areas.

In fact, increasing urbanization means phenomenal increase in the

concentration of human population in limited space which results in the increase of buildings, roads and streets, sewage and storm drains, pucca surface area, vehicles (motor cars, trucks, buses, motor cycles, scooters etc. which cause several environmental problems. For example, increasing population of the urban centres uses enormous amount of water for various purposes. The used waste water like sewage water, if untreated, pollutes the streams and lakes because the urban effluents are allowed to be drained into them. The Yamuna River at Delhi has, in fact, become sewage as 323 million gallons of sewage water enter the Yamuna per day through 17 open drains, while the capacity of all treatment plants of the Municipal Corporation of Delhi (MCD) is only 184 MGD (million gallons per day). 'Before the Yamuna enters the capital, 100 millilitres of its waters contain more than 7500 disease causing bacteria but after receiving Delhi's share of sewage it carries 34 million bacteria according to pollution control expert (N.I.P., Feb. 20, 1989). The tanneries (more than 151 in number) of Kanpur City (India) are heavily polluting the Ganga by discharging 5.8 MLD (million litres per day) of untreated water. The Ganga has been so heavily polluted at Kanpur because of urban and industrial effluents that the river water has become unsuitable even for bathing purposes. Many big cities located at the bank of the Ganga such as Kanpur, Allahabad, Varanasi, Patna, Kolkata etc. have heavily polluted the river through the disposal of sewage waters into the rivers. For example, 346 outfalls of sewage drains of Calcutta Metropolitan Area dump 52 million gallons of waste water per day into Hooghly River from domestic sources and more than 100 million gallons per day from industrial sources.

Urban centres when combined with industrial sectors become more hazardous from the standpoint of environmental degradation and pollution. Huge quantity of aerosols and gases is emitted from human 'volcanoes' and vehicle which form 'dust domes' over the cities. These 'dust domes' cause 'pollution domes' over the cities. The urban and industrial growth has resulted into rapid rate of deterioration of the quality of air because of heavy pollution of air through gases and aerosols emitted from the vehicles, factories and household appliances. About 60 per cent of the pollution of India's capital city of Delhi is contributed by vehicles. There were more than one million vehicles in 1989. It may be stated that the number of vehicles in the metropolitan area of Delhi increases by 95,000 per metropolitan area of Delhi increases by 95,000 per year. According to estimate of 1989 one million vehicles of Delhi metropolitan area spew the following pollutant daily (i) 400 tonnes of carbon monoxide which causes respiratory problem in human bodies; (ii) 6 tonnes of hydrocarbons which cause respiratory and heart diseases, hydrocarbons reach the upper air over the city and causes pollution dome; (iii) 6 tonnes of sulphur dioxide which causes sulphuric acid and falls as acid rain; (iv) large quantities of suspended particulate matter (SPM) including dust, fly ash etc. and (v) 600 Kilograms of lead which cause several diseases such as impairment of the nervous and respiratory system, mental retardation etc. According to Ashish Kothari, an environmentalist, 'pollution in Delhi has increased by 75 per cent over the last decade and its SPM level of 300 micrograms per cubic meter of air is double the safety limit set by WHO.' The introduction of CNG-operated vehicles and metro-railways in Delhi has brought down air pollution considerably<sup>8</sup>.

Kolkata and Mumbai metropolitan areas have also reached high level of air pollution. 'It has been found that emission weighing 1305 tonnes including highly injurious elements is released into the atmosphere of C.M.D. (Calcutta Metropolitan District) area every year. Out of the total quantity of pollutants, about 900 tonnes are generated in the industrial belt of Calcutta and the rest in Howrah industrial belt. Among the pollutants, the suspended particulates constitute about 43.4 per cent (569 tonnes), carbon monoxide 33.4 per cent (450 tonnes), sulphur dioxide 9.1 percent (123 tonnes), hydrocarbons 8.7 per cent (102 tonnes). Suspended particulates are the predominant pollutants in the area of 140 km<sup>2</sup> of the metropolitan area (C.M.D) where their concentration is the highest in the country. About 370 tonnes of dust are daily deposited in the city. It is also indicated that industries contribute 46.3 per cent (360 tonnes) of emission, thermal power plants 14.7 per cent (195 tonnes) and domestic emissions 11.8 per cent

(150 tonnes)<sup>9</sup>. According to the Survey Report of the National Environmental Research Institute, Nagpur, India, the level of air pollution in Delhi, Kolkata, Mumbai, Chennai, Ahmadabad, Cochin, Hyderabad, Jaipur, Kanpur, Nagpur etc. has gone up. The industrial cities such as Mumbai and Kanpur register higher level of air pollution as the air has become highly polluted and toxic. The danger of acid rains because of increasing proportion of oxides of nitrogen and sulphur in the air is increasing. It is found that the level of sulphur in the air over Indian cities is very high. About 1700 pollutants are mixed with the air every day over Mumbai metropolitan area. Out of these 55 per cent are emitted by the vehicles. The polluted air in Mumbai causes chest pains, cough, irritation of eyes, and respiratory problems.

Industrial towns and cities often cause poisonous killer urban smog due to trapping of pollutants mainly smoke and sulphur dioxide spewed from the chimneys of the mills by stagnant air during inversion of temperature. Such poisonous smogs occur over only those cities and towns which have factories and mills. The examples of poisonous smogs are of Donora, Pennsylvania, U.S.A. (October 26, 1948, 43 per cent of the population became ill while 20 persons died). Of Meuse Valley, Belgium (December 1950, 63 deaths) and of London (1952, 4000 deaths) are sufficient enough to demonstrate the killer effects of urban smogs caused by urban and industrial pollution. Increasing incidence of dense fogs and smogs over the cities causes hurdles in the transport systems.

Increasing urbanization also modifies the water budgets of surface water as well ground water. Increasing urbanization increases the frequency and dimension of floods of nearby streams because the covering of ground surface by pucca structure reduces infiltration of rain water and increases surface run-off. Moreover, the masonry storm drains quickly dispose off surface runoff of nearby streams. Urban centres also modify the local and regional radiation and heat balance through the creation of heat island and pollution dome. Increasing urbanization increases pressure on groundwater resources for the supply of water for domestic and industrial uses. Excessive withdrawal of groundwater results in the formation of large cavities below the ground surface. Besides industrial wastes from industrial cities, huge quantity of urban solid wastes also creates environmental problems. It may be pointed out that greater attention is paid towards the production, storage, accumulation, transportation, treatment and proper disposal of urban wastes in the developing countries is difficult one because (i) no proper attention is paid towards the storage, transportation, treatment and proper disposal of solid wastes, (ii) the big cities of developing countries have grown out of unplanned old cities and towns and hence there are no facilities like wide road and streets for the operation of modern machines to clear the wastes, (iii) people do not care to stock the wastes at marked places etc. The quantity of urban solid wastes is rapidly increasing with urban expansion and growth in urban population. According to the report of the National Environmental Research Institute, Nagpur (India) daily production of urban wastes in Mumbai and Kolkata is 0.5kg per day for other Indian cities. Stinking heaps of garbage stay for several days as the municipal corporations is not very particular in removing these garbages. Besides stinking odour, these garbages of waste materials also contaminate water and air of urban areas. Urban centres also cause noise pollution of various magnitudes.<sup>10</sup>

### Environmental Degradation in Tirupati

Tirupati is the fast growing city in the Rayalaseema owing to pilgrimage, educational institutions, business etc. Every day 75,000 to 1,00,000 people come to Tirupati to visit Lord Balaji at Tirumala as floating population. Besides, several small, medium and large industries have encircled Tirupati and made it rapid urbanized centre. By and large all these factors are responsible for environmental degradation.

Massive poverty issued migration from rural to the major cities like Tirupati made lopsided, unplanned and over congested urbanization causing overall deterioration of urban environment. Increasing low quality migration of poor to rural urban also led to urban involution, decay poverty, exploitation insecurity and

inequality among the migrant population. To ensure sustainable growth of tourism without causing irreversible damage to natural environment activities relating to tourism should take care of. Different types of pollution of the environment viz., air pollution, water pollution agricultural pollution, noise and reclamation pollution and role of hazardous substances and wastes in pollution in Tirupati are soaring. The current status of natural resources like forest and grasslands, wildlife, soil and water fossil fuels and mineral and non-conventional energy sources is gloomy. It is dire important to focus on the future environmental problems and strategies for their management.

### CONCLUSION

Population explosion, increased industrialization rapid urbanization and intensive agriculture have caused tremendous change and damage to the environment. Environmental degradation means overall lowering of environmental qualities because of adverse changes brought in by human activities in the basic structure of the components of the environment to such an extent that these adverse changes adversely affect all biological communities in general and human society in particular. In Tirupati, several small, medium and large industries have encircled Tirupati and made it rapid urbanized centre. By and large, all these factors are responsible for environmental degradation. It is dire important to focus on the future environmental problems and strategies for their management.

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