

# Critical Study of Man- Made and other Destructive elements of Environment and to the Ecosystem

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## ABSTRACT

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Our atmosphere on global as well as regional scale is heavily polluted. The defensive ozone shield in the heavily populated latitudes of the northern side of the equator is thinning twice fast as researchers thought a couple of years ago. The development of green house gases will lead to significant changes in the weather patterns in the near future leading to global warming. The destruction of ozone layer and the further warming of the earth surface threaten catastrophic consequences, for example, eruption of cancerous and tropical diseases, disruption of oceans food chain, rising of sea levels, submersion of many islands, melting of small land-based glaciers, flooding in many low lying coastal areas and harvest loss and so on.

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## 1. Introduction

The concept of environment is as old as the concept of the nature itself. It is a composite term referring to conditions in which organisms consisting of air, water, food, daylight and so on., flourish and wind up living sources of life for-all the living and non-living beings including plant life. The term also includes atmospheric temperature, wind and its speed.

### 1.1 Environmental Pollution

Before understanding what "Environmental Pollution" is it is equally necessary to-know what "pollution" is.

The Royal Commission on Environmental Pollution in U.K. in its third report gave the following definition to the expression "Pollution", namely: The introduction by man into the environment of substances or vitality liable to cause hazards to human health, harm to living resources and ecological systems, damage to structure or amenity or interference with legitimate employments of the environment".

According to Section 1(3) of the U.K. Environment Protection Act, 1990, the term „Pollution" means: The release (into any environmental medium) from any procedure of substances which are capable of causing harm to man or any other living organisms upheld by the environment.

Pollution happens when there is the potential for harm. Harm of man isn't confined to physical injury yet encompasses offense caused to any of his faculties or harm to his property, therefore scents and noise which I may not cause injury can constitute pollution. Harm to living organisms can include harm to their health or interference with the ecological systems of which they form a part".

## 2. Kinds of pollution

Environmental pollution may broadly be classified into: (1) Natural pollution; (2) Man-made pollution.

- Natural Pollution: Environment is polluted often by natural phenomenon, for example, earthquakes, floods, drought, cyclones, and so forth.

- Man-made Pollution: Human activities.
- The environmental pollution can also be classified further as, Air pollution, water pollution, land pollution, food pollution, noise pollution and radio-active pollution, and so forth.

## 3. Factors of environmental problems

The „environmental crisis" is caused because of environment and ecological changes because of developmental procedure of the 'economic and technological man" of the present century In fact if the present century is marked by financial, logical and technological development on the one hand, it is plagued by difficult problems of environmental problems on the other hand. The environmental crisis arising out of the environmental deterioration caused by several forms of pollution, depletion of natural resources because of rapid rate of their exploitation and increasing reliance on vitality consuming and ecologically damaging technologies, the loss of habitats because of industrial, urban and agricultural expansion, reduction and loss of ecological populations because of unreasonable utilization of toxic pesticides and herbicides and loss of several types of plants because of practice of monoculture removal of habitats through forest clearance has now happened to 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 the environment, the disruption of the earth's natural ecosystems and the depletion of resources.

The most striking reason of the environmental degradation and consequently global environmental crisis is the fact of deteriorating relationship among man and environment because 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.

The impact of man on environment through his economic activities are varied and very mind boggling as the transformation or modification of the natural condition and procedure leads to a progression of changes in the biotic and abiotic components of the environment. The impacts of man on environment fall into two categories (i) direct or intentional impacts and (ii) indirect or unintentional impacts, Direct or intentional impact of human activities are preplanned and premeditated because man knows about the consequences, both positive and negative of any program which is launched to change or adjust the natural environment for economic development of the region concerned. The effects of anthropogenic changes in the environment are noticeable within brief period and these effects are reversible. On the other hand the indirect impacts of human activities on the environment are not premeditated and preplanned and these impacts arise from those human activities which are directed to accelerate the pace of economic growth, especially industrial development. The indirect impacts are experienced after long time when they wind up cumulative. These indirect effects of human economic activities may change the overall natural environmental system and the chain-effects sometimes degrade the environment to such a degree, that this winds up suicidal for human beings.

#### 4. Main causes of environmental pollution

The issue of environmental pollution, we face today, is an intricate consequence of forces connected with various interrelating factors. There are clearly a number of dissimilar and conflicting views of what could be the basic factors underlying the environmental crisis. No single cause can be considered as the underlying driver of environmental impairment. In any case, the following causes could be pointed out as the generally underlying factors however each of these too could be operating simultaneously and their balance may vary from place to place and through time.

##### a. Population growth

Modern thinkers consider that growth of population is the main driver for many human problems. This observation also applies to environmental degradation. Increase in the population will have a multiplier impact requiring proportionate increase in all requirements necessary for the presence of human beings. Population growth requires abnormal exploitation of natural resources to give day-to-day essential requirements of life. It results in migration of people and growth of urban areas, thereby inviting new problems of health, biology and human sustenance.

##### b. Increased General Affluence and Economic Growth

The affluence (for example material aspects of per capita consumption of merchandise and resources) is an important factor in man-resource-environment relationship. It is the increasing per capita demand of rich which is absorbing the growth in yield of products and enterprises in the created and developing countries and cause abuse or abuse and pollution of resources, for the affluence unmatched to the necessary resource consumption and not motivated by human requirements produce inclination to waste matter and vitality. Surprisingly, affluence factor however, having a great impact on environment, is only from time to time talked about. On the

other hand, poor and the destitution often get blamed for the destruction of environment. The notion that neediness or the poor obliterate the environment most is nevertheless partially obvious.

##### c. Nature of Modern Technology

The nature of gainful technology as of late is firmly related to the environmental crisis. Commoner maintains that sweeping transformations of gainful technology since World War II beneficial technologies with intense impacts on environment have displaced less ruinous ones. This factor has been largely responsible for the generation of synthetic and non-biodegradable substances, for example, plastics, chemical nitrogen fertilizers, synthetic detergents, synthetic filaments, big cars, petrochemical and other environmentally injurious industries and 'disposable culture. Along these lines, environmental crisis is the inevitable aftereffect of a counter ecological pattern of gainful growth. Ecologically generous technologies did and do exist but they are not utilized, for they are considered inconsistent with the short-term interests of private profit maximization.

##### d. Deforestation

Forests are invaluable property of a nation because they give raw materials to modern industries, timber for building purposes, habitats for various types of animals and micro-organisms. Great fertile and supplement rich soils having high content of organic matter, offer protection to soils by binding the soils through the network of their underlying foundations and by protecting the soils from direct impact of falling raindrops. They encourage and increase infiltration of rainwater and therefore allow maximum recharge of groundwater resources, minimize surface run-off and thus decrease the frequency, intensity and dimension of floods. They help in increasing the precipitation; they are natural sink of carbon dioxide because they use carbon dioxide to prepare their food during the procedure of photosynthesis. They give kindling to millions of people all over the world and food and safe house to innumerable humans and animals. In fact, forests are 'life line' of a nation because prosperity and welfare of the society directly relies upon sound and healthy forest front of a nation concerned. Forests are main component of the biotic components of the natural environmental system and the stability of the environment and ecological balance largely rely upon the status of the forests of the region concerned.

It involves genuine concern that the present economic man has forgotten the environment and ecological significance of natural vegetations mainly forests and grasslands and has annihilated the forests so rapidly and alarmingly that the forest areas at global, regional and local levels have so markedly decreased that several genuine environmental problems, for example, accelerated rate of soil loss through rain splash, sheet wash, rill and crevasse erosion, increase in the frequency and dimension of floods, greater, incidence of drought because of decrease in precipitation and so forth have plagued the modern human society. The major causes of deforestation at global and regional levels are conversion of forest land into agricultural land, shifting cultivation, transformation of forests into pastures, overgrazing, forest flames, lumbering, multipurpose stream ventures and so on.

Deforestation brings forth several problems encompassing environmental degradation through accelerated rate of soil erosion, increase in the sediment load of the waterways, siltation or repositories and stream beds, increase in the frequency and dimension of floods and droughts, changes in the pattern of distribution of precipitation, intensification of greenhouse effects increase in the ruinous force of the atmospheric storms and so on economic loss through damages of agricultural yields because of increased incidence of floods and draughts, decrease in agricultural production of loss of fertile top soils, decrease in the supply of raw materials to the industries and building matters and so on. In this manner deforestation cause a chain effects which adversely affect the natural environment.

#### e. Agricultural Development

Agricultural development means expansion of agricultural land increase in agricultural profitability and net agricultural production. It is because of development of modern logical systems, advanced technologies, increased production and utilization of chemical fertilizers, expansion in irrigational facilities, development of high-yielding varieties of seeds, and so on. This has tackled the issue of growing demand of food because of consistently increasing world population on the one hand; it has also created or is creating hazardous environmental problems of genuine concern on the other hand. In this manner modern economic and technological man is at the cross road of dangers in all directions.

The agricultural development degrades the environment in a variety of ways, for example (i) through the application of chemical fertilizers and pesticides and insecticides, (ii) through the increase in irrigational facilities and amount of irrigation, (iii) by making changes in biological networks and so on.

Conversion of forests land into agricultural farms on messy ground accelerates rate of soil erosion. Increased in agricultural land at the cost of destruction of forest and consequent soil erosion, substantial increase in the efficiency of land through the practice of intensive cultivation, increased utilization of machines and modern logical systems, application of chemical riches, pesticides, insecticides and herbicides, increase in the frequency and area of watering of agricultural fields, and so on. All these procedures and measures of increased agricultural development cause several genuine environmental problems. It appears that the main driver of all these environmental problems arising out of agricultural development is the increase of human population at alarming rate. So the foremost advance to be taken is to stop population growth because if population continues to develop agricultural development has to be maintained.

#### f. Industrial Development

"Rapid Industrial Development has given economic prosperity to human society. It has also given new dimension to financial structure and has given material comfort to the people of industrially created countries however it has also created many fold environmental problems. In fact, the glittering effects of industrialization have affected the mind of the general public that industrialisation is presently being

considered as the parameter of modernity and as a necessary component of financial development of a nation.

Rapid rate of industrialization came about into rapid rate of exploitation of natural resources and increased industrial yield. Both the components of industrial development for example exploitation of natural resources and industrial production have created several lethal environmental problems and have caused large scale environmental problems and ecological imbalance at global, regional and local levels in a variety of ways. Exploitation of natural resources in order to fulfill the industrial need of raw materials has come about into (i) the reduction of forest covers because of neglectful falling of trees, (ii) excavation of land for mining purposes, (iii) reduction in arable land because of industrial expansion, (iv) lowering of groundwater level because of extreme withdrawal of groundwater, (v) collapsing of ground surface because of withdrawal of mineral oil and groundwater, and so on.

Other than wanted production there are various undesired yields from the factories, for example, industrial wastes, polluted water, toxic gases, chemical precipitates, aerosol ashes and smokes and so forth which dirty air, water, land, soils and so forth., and accordingly degrade the environment. The industrialized countries have increased the concentration of pollutants produced from the factories in the air, water and land to such a degree, that they have degraded the environment to as far as possible and have expedited the human society the brink of its destruction.

The adverse effects of industrialization may change the overall character of natural system and the chain-effects sometimes turned out to be suicidal for human society. Majority of the impacts of industrialization are related to pollution and environmental degradation. The release of toxic components into the environment through the application of chemical fertilizers, pesticides and insecticides (yield of chemical industries) changes the food chains and food networks and physical and chemical properties of soils. Similarly the release of industrial wastes into stagnant waters of ponds, tanks, and lakes into streams and seas contaminates water and causes several diseases and deaths of organism and along these lines irritates ecological balance of aquatic ecosystem.

Increasing industrial expansion is responsible for the release of gigantic quantities of pollutants (e.g.) ions of chlorine, sulfate, bicarbonate, nitrate, sodium, magnesium, phosphate, through sewage effluents into the streams and the lakes and therefore for contaminating the water. Release of several gases, smokes, ashes and other aerosols from the smokestacks of the factories adversely affects the environment in a number of ways. The burning of hydrocarbon energizes (coal and oil) has increased the concentration of CO<sub>2</sub> in the atmosphere and in this manner has changed the natural gaseous composition of the atmosphere. The increase in the construction of CO<sub>2</sub> content of the atmosphere may change global radiation and heat balance by increasing the level of reasonable heat in the atmosphere because CO<sub>2</sub> intensifies the greenhouse effects of the atmosphere as CO<sub>2</sub> allows the solar radiation to pass through the atmosphere and reach the earth's surface yet stops the outgoing long wave terrestrial

radiation from escaping to the space release of chlorofluoro carbon in the atmosphere causes depletion of ozone layer. Depletion in ozone layer means less absorption of ultraviolet solar rays and in this way substantial increase in the temperature at the earth surface. Consequently changed in the global radiation and heat balance caused because of increase in the concentration of carbon dioxide in the atmosphere and depletion of ozone layer may cause changes in weather and climatic conditions at global and regional levels may cause serious damages to plant and animal lives and in this way may cause ecological imbalance. It may cause dangerous diseases like skin cancer and so on.

Release of toxic gases through advertent and inadvertent actions of man causes environmental hazards which devastate all types of life forms in the affected areas. The Bhopal Gas Tragedy (December 3-4, 1984, India) is an example of disastrous effects of modern industrialization. Acid rains, urban smogs, nuclear holocaust, and so on., are the other forms of environment hazards emanating from industrialization.

#### **g. Urbanization**

Mass migration of population from rural areas to urban focus and origin and expansion of new urban focuses because of industrial expansion and development are responsible for rapid rate of exploitation of natural resources and several types of environment degradation and pollution in the created and developing countries. The level of urbanization in the created countries of the world has already reached its peak. The accumulation of wealth and availability of increasingly economic and opening for work in the urban focuses have come about into the concentration of population in the congested metropolitan areas and along these lines the formation and growth of big ghetto areas.

In fact, increasing urbanization means increase in the concentration of human population in restricted space which results in the increase of buildings, roads and boulevards, sewage and storm drains, vehicles (motor cars, trucks, transports, motor cycles, and so forth.) number of factories, urban wastes, aerosols, smokes and cleans, sewages waters and so on which cause several environmental problems. For example, increasing population of the urban focuses utilizes gigantic amount of water for various purposes. The utilized waste water like sewage water, if untreated, dirties the streams and lakes because the urban effluents are allowed to be drained into them.

Urban focuses when combined with industrial sectors turn out to be progressively hazardous from the standpoint of environmental problems and pollution. Colossal quantity of aerosols and gases is radiated from Chimneys of factories and vehicles which form "Residue Domes" over the cities. These Dust Domes cause 'Pollution Domes' over the cities. The urban and industrial growth has come about into rapid rate of deterioration of the quality of air because of heavy pollution of air through gases and aerosols discharged from the vehicles, factories and house-hold appliances. About 60 per penny, of the pollution of Indian capital city of Delhi is contributed by vehicles, Calcutta and Bombay metropolitan areas have also reached abnormal state of air pollution. According to the

overview report of the National Environmental Research Institute, Nagpur (India) the level of air pollution in Delhi, Calcutta, Bombay, Madras, Ahmedabad, Cochin, Hyderabad, Kanpur, Nagpur and so on has gone up. Other than industrial wastes from industrial cities, immense quantity of urban strong wastes also creates environmental problems. The quantity of urban strong wastes is rapidly increasing with urban expansion and growth in urban population.

#### **h. Unplanned Urbanization**

The skewed urban development has deteriorated the environment obviously and considerably in both the urban and rural areas. The urban areas experience the ill effects of their own predicament, squatter settlements, lack of sanitation and water supply, overcrowding, congestion and pollution. The cities in India are facing environmental problems like lack of sanitation, chronic shortage of traffic congestion and so on. Besides, the domestic and industrial waste disposal in the urban areas is intense. The greater part of the cities are lacking sewer systems. For example contemplates by the Central Board for the prevention and control of water pollution have demonstrated that the discharge of community wastage and industrial effluents is the major cause of water pollution. At present 56% of Class-I cities and 87% of Class II towns don't have sewerage facilities. We therefore need an all around controlled and very much managed procedure of urbanization in order to check rural urban migration and other related problems.

#### **i. Coal burnt Thermal Power Plants**

Power Plants either in public or private sector mainly use coal for generation of power. About 62% of the coal created in our country is used for generation of power which accounts of 65% of power generation. This procedure results in the accumulation of various by-items, for example, bottom ash, kettle slag and fly ash. Fly ash alone amounts to over 70% of the total quantity. Disposal of this gigantic amount of flyash is a troublesome and delicate task. In spite of the fact that this material can be utilized in manufacture of bond, block and also utilized as soil conditioner yet these activities have not gained much popularity because of economical and social consideration. Regardless of whether the fly ash is used for the above mentioned activities, it won't be conceivable to use even 30% to 40% of the ash delivered. Along these lines there is a need to store the ash delivered so as to have minimum damage to air, water and soil bodies. A super thermal power plant based on about 800 acres of land normally requires 1200 acres for ash disposal. On the basis of the ash production inclines the area prerequisite for dumping of the ash is around 40000 hectares. Power plants are preferably placed away from the human settlements and besides on waste lands, yet with course of time a portion of the cultivable area is also secured for ash mount site. Nearness of ash particularly in the atmosphere is of major concern to the people living near the plant site. This is particularly extreme in summers because of prevailing high wind speeds. The finer fractions of fly ash are potentially harmful as they get deposited in lungs/pulmonary tissues of respiratory track when inhaled.

#### **j. Poverty**

The facts demonstrate that poor cause damage to environment. Because of poverty the people misuse too much the natural resources of the country for meeting their basic needs (food, fuel, cover, work feed for their cattle). Poverty and need are indeed the greatest polluters as told by late Mrs. Indira Gandhi in her address to the Stockholm Conference. Henceforth necessary advances ought to be taken to bring the needy people above the poverty line.

## 5. Conclusion

The causes for environmental problems are many. The variety of causes makes it hard to clearly delineate the causes and consequences of environmental degradation as far as basic one to one relationship. The causes and effects are often interwoven in complex snare of social, technological, environmental and political factors. Be that as it may, a portion of the extremely common causes of environmental degradation which can be clearly pointed out are the population growth, the economic growth associated with the affluence factor and

change of technology. Population is an important resource for development, yet it is a major cause of environmental degradation when it surpasses the threshold furthest reaches of the emotionally supportive networks. The overriding impact of adverse demographic weight ultimately falls on our resources and ecosystems. Combined with it the conditions of poverty and underdevelopment themselves create a situation where the people are forced to live in squalor and further degrade their environment. The procedure of development itself also leads to damage of the environment, if not properly managed. Associated with the rapid economic growth, the extravagant affluence consume far more resources and put far greater weight on natural resources. The change of technology causes planned oldness causing the generation of an ever increasing number of wastes which in turn demonstrate ecologically harmful. Transient interests of private profit maximization, further, hamper the procedure of replacement of old technologies by the ecologically considerate technologies.

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