



Environmental Issues: A Hurdle in Sustainable Development

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I. INTRODUCTION

While modern societies face growing concern about global environmental issues, developing countries are experiencing complex, serious and fast-growing pollution problems of their own. The potent combination of industrialization, urban development and mass consumption trends is exacerbated by foreign companies operating with little regard for the impact on the local environment. Environmental pollution is more than just a health issue; it is a wider social issue in that pollution has the potential to destroy homes and communities. Pollution problems are also closely tied to the mode of development in developing countries. Despite this, many developing countries either have not developed environmental pollution control measures, or have not provided adequate implementation structures to ensure that policies are effective. During the period of rapid economic growth after the Second World War, Japan experienced a variety of terrible environmental problems on a scale unprecedented in the world. These environmental problems can be attributed to the prevailing emphasis at the time on economic growth and profits at the expense of public health. For this reason, the government was unwilling to pursue environmental strategies. Worsening environmental problems led to the emergence of numerous victims' groups and turned the tide of public opinion, so that governments at the prefectural and national level were forced to act. Eventually, after much trial and error, effective strategies for dealing with environmental pollution were put in place and as a result the quality of the environment began to improve. By describing Japan's experiences with respect to the problems caused by the initial reluctance to address environmental issues, as well as the success of subsequent environmental initiatives, it is hoped

that we can help to prevent worsening health problems in developing countries and promote sound and healthy social development. Pollution may be defined as an undesirable change in the physical, chemical or biological characteristics of air, water and land that may be harmful to human life and other animals, living condition, industrial processes and cultural assets. Pollution can be natural or man-made. The agents that pollute are known as pollutants (Trivedi & Jain, 2007).

Pollutants:

Byproducts of man's action are called pollutants. Some of important pollutants are summarized below:

- (i) **Deposited matter:** Soot, smoke, tar or dust and domestic wastes.
- (ii) **Gases:** CO, nitrogen oxides, sulphur oxides, halogens (chlorine, bromine and iodine).
- (iii) **Metals:** Lead, zinc, iron, and chromium.
- (iv) **Industrial pollutants:** Benzene, ether, acetic acid etc. and cyanide compounds.
- (v) **Agriculture pollutants:** Pesticides, herbicides, fungicides and fertilizers.
- (vi) **Photochemical pollutants:** Ozone, oxide of nitrogen, aldehydes, ethylene, photochemical smog and proxy acetyl nitrate.
- (vii) **Radiation pollutants:** Radioactive substances and radioactive fall-outs of the nuclear test.

Types of Pollution

The major types of pollution are (i) Air Pollution, (ii) Water Pollution, (iii) Soil Pollution, and (iv) Noise Pollution.

Air Pollution: The WHO defines air pollution as the presence of materials in the air in such concentration which are detrimental to man and his environment. So many ingredients find their way in the air and these are mostly gases, rapidly spread over wide areas (Cropper. et al. 1997). Diverse sources of air pollution are fossil fuels, industries, agricultural activities, wars, natural causes and emission from vehicles.

Water Pollution: Water pollution is the contamination of water bodies e.g. lakes, rivers, oceans, and groundwater. Water pollution occurs when pollutants are discharged directly or indirectly into water

bodies without adequate treatment to remove harmful compounds (Gupta & Deshpande, 1998). Water pollution affects plants and organisms living in these bodies of water; and in almost all cases the effect is damaging either individual species or populations, but also to the natural biological communities. Water is typically referred to as polluted when it is impaired by anthropogenic contaminants and either does not support a human use, like serving drinking water, and/or undergoes a marked shift in its ability to support its constituents biotic communities, such as fish. Natural phenomena such as volcanoes, algae blooms, storms, and earthquakes also cause major changes in water quality and the ecological status of water (Ahmad, *et al* 2001).

The specific contaminants leading to pollution in water include a wide spectrum of chemicals, pathogens, and physical or sensory changes such as elevated temperature and discoloration. While many of the chemicals and substances that are regulated may be naturally occurring (calcium, sodium, iron, manganese, etc.) the concentration is often the key factor determining what is natural component of water, and what is a contaminant.

Soil Pollution: Soil pollution is defined as the build-up in soils of persistent toxic compounds, chemicals, salts, radioactive materials, or disease causing agents, which have adverse effects on plant growth and animal health. Like water and air, soil is also equally potent for living organisms. It supports plants on which all other living organisms depend. The process of soil formation is so slow that the soil may be regarded as a non-renewable source (Sharma, 2004). Therefore, the study and control of soil pollution is important. Any substance that reduces soil productivity is known as soil pollutants. Varied soil pollution sources are pesticides and insecticides that are sprayed on crops, fertilizers and manures that are added to the soil to increase the crop production and chemicals present in industrial waste.

Noise Pollution: Noise can be defined as unwanted/unpleasant sound. So noise pollution is unwanted sound dumped into the atmosphere without regard to the adverse effects it may have. Noise pollution or environmental noise is displeasing. Human, animal or machine created sound disrupts the activity or the balance of human or animal life. The word noise comes from the Latin word nausea meaning seasickness.

The source of most outdoor noise is transportation systems, including motor vehicle noise, air craft noise, rail noise etc. Poor urban planning may give rise to noise pollution since side-by-side industrial and residential buildings can result in noise pollution in residential areas. Other sources of indoor and outdoor noise pollution are car alarms, emergency service sirens, office equipments, factory equipments, construction work, and grounds keeping equipment, barking dogs, appliances, power tools, audio entertainment systems, loud speakers and noisy people.

Smog: There are many types of environmental pollution, and one of the most dangerous of these is pollution that affects the ozone layer and results in smog. Cities like Los Angeles are the most at risk, where the smog blocks the atmosphere and creates serious health risks that can be deadly. This pollution can lead to lung cancer, asthma attacks which can be fatal, and many other medical problems. Smog can combine with other types of air pollution, such as particle pollution, to increase the health and safety risks. This environmental pollution type is one of the most serious, and affects many areas around the globe.

Particle Air Contamination: One of the types of environmental pollution that must be stopped because of the fatal consequences that can result is particle air contamination. This occurs when particles of liquids and solids are released and mix with the air. These particles can consist of many different things, including metals, exhaust fumes, chemicals, ash, and other components. This type of air contamination can be caused by exhaust, burning wood, industrial pollution, and many other sources.

Greenhouse Gas Emissions: Greenhouse gas emissions are one of the types of environmental pollution that must be prevented, because of the effect it has on the entire earth. This pollution thins out the ozone layer, and increases the global warming effects that are being seen. Temperature fluctuations and changes, and other effects are being seen because of greenhouse gas emissions. These emissions may also contribute to smog, because they pollute and damage the ozone layer.

Nuclear Power Plants and Radioactive Waste: Environmental damage from radioactive waste and nuclear material is a very serious concern in the modern world. This source of pollution can be deadly, and can have consequences which can last generations, and thousands of years for some waste types. Radioactive waste can alter genetic material, resulting in gene and chromosome changes which can be passed on to future generations. Cancers and radiation sickness can also result from being exposed to this source of pollution.

Heavy Metal Use and Disposal: Heavy metal pollution can occur from many things, including mining and other extraction and industrial procedures. Heavy metals may be used to leach gold and other ores from the earth, leaving behind destruction. The heavy metals may lie in any groundwater or puddles, and poison birds and other wildlife in the area as well as people.

Pollution From Coal Power Plants: Coal power plants have the distinction of being one of the most deadly types of environmental pollution. These plants release tons of particle pollution and greenhouse gas emissions, as well as encouraging mining to recover coal. There are polluting byproducts created when the coal is burnt, and the ashes and leftover waste can be very toxic to the environment and life in the area. These hazardous wastes must be disposed of, and this is usually done by dumping them in nearby lakes and in pits dug for this purpose. This disposal contaminates the land and water surrounding the plants, creating significant environmental pollution and harm to the ecosystem.

Chemicals: One of the types of environmental pollution that is the most dangerous is the use of chemicals. Chemicals, like pesticides and those used in manufacturing and other industrial applications, can be a very dangerous source of pollution to the environment. Chemicals can seep into the ground, rivers and lakes, and have devastating effects to everything in the area. Plants, fish, and wildlife, as well as humans in the area, may be poisoned quickly or the effects may be slow and take months or years for medical symptoms to show. Many chemicals are considered carcinogens and are known to cause cancers in animals and humans.

Pollution in India: One of the primary causes of environmental degradation in a India could be attributed to rapid growth of population, which adversely affects the natural resources and environment. The rising population and the environmental deterioration face the challenge of sustainable development.

Sustainable Development: Sustainable Development is multilayer, which covers economic, social, political educational development. The puzzle of Sustainable Development cannot be solved by concentrating on point of pieces. It has to be seen in both its scientific and social dimension not as a series of a isolated problems or issues. Agenda 21 and other UN documents (Earth Charter, Millennium Declaration) emphasize that education and science are critical for promoting Sustainable Development and improving capacity of the people to address environment and developments. Ever since Sustainable Development has been a common concern in all UN conference and there has been a common consensus that education is a driving force for the change needed (Singh & Jha, 2007).

The existence or the absence of favorable natural resources can facilitate or retard the process of socio-economic development. The three basic demographic factors of births (natality), deaths (mortality) and human migration (migration) and immigration (population moving into a country produces higher population) produce changes in population size, composition, distribution and these changes raise a number of important questions of cause and effect.

Population growth and economic development: Population growth and economic development are contributing to many serious environmental calamities in India. These include heavy pressure on land, land degradation, forests, habitat destruction and loss of biodiversity. Changing consumption pattern has led to rising demand for energy. The final outcomes of this are air pollution, global warming, climate change, water scarcity and water pollution.

Environmental issues

- Environmental issues in India include various natural hazards, particularly cyclones and annual monsoon floods, population growth, increasing individual consumption, industrialization, infrastructural development, poor agricultural practices, and resource maldistribution have led to substantial human transformation of India's natural environment. An estimated 60% of cultivated land suffers from soil erosion, water logging, and salinity.
- It is also estimated that between 4.7 and 12 billion tons of topsoil are lost annually from soil erosion. From 1947 to 2002, average annual per capita water availability declined by almost 70% to 1,822 cubic meters, and overexploitation of groundwater is problematic in the states of Haryana, Punjab, and Uttar Pradesh. Forest area covers 18.34% of India's geographic area (637000 km²). Nearly half of the country's forest cover is found in the state of Madhya Pradesh (20.7%) and the seven states of the northeast (25.7%); the latter is experiencing net forest loss.
- Forest cover is declining because of harvesting for fuel wood and the expansion of agricultural land. These trends, combined with increasing industrial and motor vehicle pollution output, have led to atmospheric temperature increases, shifting precipitation patterns, and declining intervals of drought recurrence in many areas.

- The Indian Agricultural Research Institute of Parvati has estimated that a 3 °C rise in temperature will result in a 15 to 20% loss in annual wheat yields. These are substantial problems for a nation with such a large population depending on the productivity of primary resources and whose economic growth relies heavily on industrial growth. Civil conflicts involving natural resources—most notably forests and arable land—have occurred in eastern and northeastern states.

SUMMARY

Pollution is an undesirable change in the physical, chemical or biological characteristics of air, water and land that may be harmful to human life and other animals, living condition, industrial processes and cultural assets. Pollution can be natural or man-made. The agents that pollute are known as pollutants. Sustainable Development is multilayer, which covers economic, social, political educational development. The puzzle of Sustainable Development cannot be solved by concentrating on point of pieces. It has to be seen in both its scientific and social dimension not as a series of a isolated problems or issues. Environmental issues in India include various natural hazards, particularly cyclones and annual monsoon floods, population growth, increasing individual consumption, industrialization, infrastructural development, poor agricultural practices, and resource misdistribution have led to substantial human transformation of India's natural environment.

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