Environment – The Fundamental Resource

Introduction

In recent years, the issue of environment and its progressive degradation has dominated headlines across the globe, more so in the context of global warming. Development at the cost of environment has threatened the very existence of life on our planet. If this sounds like doomsday prophecy, think again for living in denial will only invite a total catastrophe.

Air Pollution in the United States in 1973
Image Courtesy of Frank J. Aleksandrowicz, U.S. National Archives and Records Administration at https://en.wikipedia.org/wiki/File:DARK_CLOUDS_OF_FACTORY_SMOKE_OBSCURE_CLARK_AVENUE_BRIDGE_-_NARA_-_550179.jpg

Environment and its Functions

Environment is the **sum total of all biotic and abiotic** resources – the total planetary inheritance. This includes air, water, land - soil, mountains, minerals, animal life, forests – plant life and the like. Study of environment and its degradation involves understanding the relationship between biotic and abiotic elements.

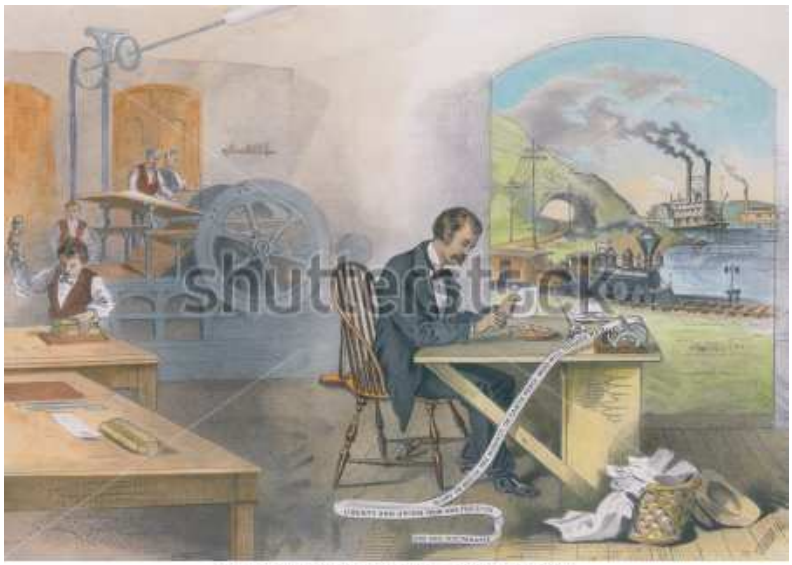
Functions of the environment include:

- **supplies resources**

- **assimilates wastes**
- **sustains life** by providing genetic and biological diversity
- provides **aesthetic services** like scenery

Environmental Imbalance a.k.a. Pollution

All activities for survival and economic development require resources. Utilization of resources produces wastes. The explosion in global population and increasing affluent consumption i.e. excessive consumption of resources, usually by the wealthy, puts tons of pressure on available resources and generates copious wastes.



The Industrial Revolution

Image Courtesy of Everett Historical at https://www.shutterstock.com/image-illustration/nineteen-century-life-changed-by-steam-237228295?src=PtfHEWVU8-0ZkVByKlrpcA-1-56

Pollution results when the rates of resource extraction and waste generation respectively exceed the natural rates of resource regeneration and waste assimilation. This mismatch is created by human interference that prevents the environment from balancing its first two functions, it is unable to execute its all-important third function of sustaining life.

This is precisely what has been happening since the **Industrial Revolution** – a phase when machines were used on a scale larger than ever before. There was a sudden expansion in the production capacity. To benefit from this great change, production of goods had to be increased and markets had to be found for this produce.

Increasing production needed greater extraction of resources. Selling these in the market required encouraging people to consume more – more than they actually required. Greater consumption produced greater wastes.

The imbalance creates the following **environmental problems**:

- **land degradation** due to incorrect practices in agriculture, grazing, mining, and groundwater extraction; deforestation, forest fires, solid waste mismanagement, and the competing use of land for forests, pasture, agriculture, industry, and human settlements
- **biodiversity loss** – extinction of plant and animal species that is a result as well as the cause of ecosystem destruction
- **air pollution** with an emphasis on industrial and automobile pollution and its implications for **global warming**
- **ozone depletion**
- **water pollution** due to untreated sewage and industrial effluents

Seen from a holistic point of view, these effects destroy livelihoods, lower the quality of life, disrupt cultures, and trigger social instability.

Global Warming

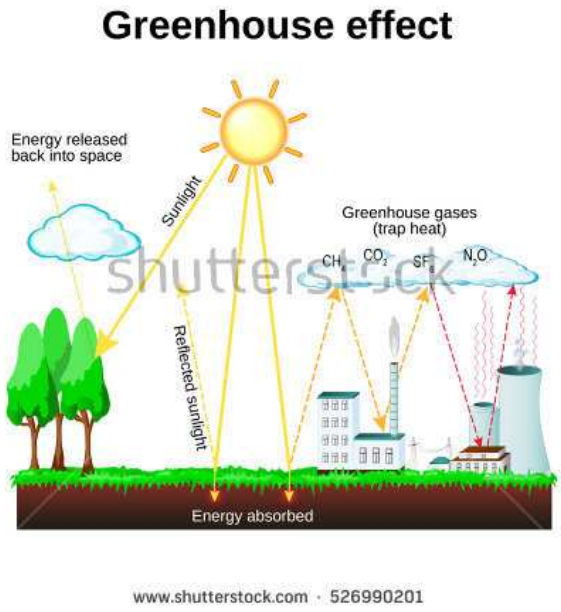
Global Warming deserves a separate mention in view of its enormity, immediacy, and the dread it inspires. The accumulation of **Green House Gases** (GHG) in atmosphere traps heat increasing the atmospherical temperature. GHGs include Carbon-di-Oxide, Methane, Nitrous Oxide, Sulphur hexa Fluoride, Per Flouro Carbons (PFCs), and Hydro Flouro Carbons (HFCs). The **destructive effects** of global warming are:

- **floods** due to melting glaciers and expansion in the volume of sea water
- **droughts** due to increased aridity and non availability of water from glacier-melt during the dry season

These two effects can **each** create **100 million displaced people** by 2050**.**

- **cyclones** due to increased sea surface temperature
- **loss of biodiversity** due to species extinction
- **spread of tropical diseases** as warmer temperatures are more conducive to such microbes

- fall in agricultural yields
- energy insecurity
- **forest fires**
- **weakening** of the **North Atlantic Drift**, a warm ocean current, that can bring usher in an ice age in North Western Europe



Greenhouse Effect

Image Courtesy of Designua at https://www.shutterstock.com/image-vector/greenhouse-effect-diagram-showing-how-works-526990201?src=g4hFUytPdOZj4K3j1QgseQ-1-0

To prevent runaway destruction, **temperature rise** needs to be **restricted to below 2°C over pre industrial levels** and **CO_2 levels** need to be maintained **below 400 ppm** (parts per million), presently around 380 ppm. In absolute terms, CO_2 levels need to be cut to 70 billion tons (bnT) by 2050 from the present 120 bnT.

Immediate action will cost an estimated $350 bn or 1% of global GDP (for 2006) as compared to $7 trillion losses by 2050 – 20% of estimated global GDP for 2050. The latter statistic is in terms of **"opportunity costs"** i.e. cost of dealing with problems like: water becoming an economic commodity, epidemics, research for finding alternative resources etc.

International Measures against Environmental Degradation

- **Kyoto Protocol, 1997,** to check global warming aimed for a 5% cut in GHG emissions over 1990 levels by 2008 – 12. It continued the

principle of **'common but differentiated responsibilities'**, declared in the **1992 Rio Earth Summit**. This principle fixed more responsibility on the developed nations as industrialization and affluent lifestyles first began in these countries

This protocol was succeeded by the agreement at the **Copenhagen UN Climate Change Conference (2010)** that saw non-binding agreements to limit temperature rise to 2°C over pre-industrial levels. No such agreement was forthcoming for cuts in GHG emissions. Many countries, however, announced unilateral emission cut targets

- **Montreal Protocol (1987)** for checking Ozone Depleting Substances that has been hugely successful
- **Cartagena Protocol** for biosafety
- **Dublin Rio Principles, World Water Council,** and **Integrated Water Resource Management** to limit water pollution

International environmental NGOs like **Greenpeace** use techniques like research, direct action, and lobbying to raise environmental awareness and prevent its destruction. Other international organizations like **Intergovernmental Panel on climate Change** (IPCC), **Global Environmental Facility** (GEF), **United Nations Environment Program** (UNEP) etc. are active in this sphere.

Sustainable Development - a Viable Alternative

Sustainable Development is premised on the **interdependence of environment and economy**. Sustainable development is 'development that meets the needs of the present generation without compromising the ability of the future generations to meet their needs.'

Strategies for Sustainable Development:

- **limiting human population** and **affluent consumption** with a serious rethink on the present marketing / advertising strategies that encourage affluent consumption
- **restricting rate of extraction of renewable resources** to below the rate of their regeneration and rate of extraction of **non renewable resources** to below the rate of creation of renewable substitutes
- technological progress to **improve production efficiency** and to **correct inefficiencies from pollution** to **reduce wastage**

Measures for Sustainable Development:

- use of non-polluting **renewable energy** sources for power generation
- building and improving **public transport systems** to lower per capita emissions

Sustainable Development

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- **reducing dependence on fossil fuels** to bring down vehicular pollution and catastrophic oil spills
- scientific **treatment** of **sewage** and **industrial effluents**
- providing clean fuels like **LPG** and **biogas** in rural areas and **CNG** in urban areas
- **scientific afforestation** and **checking deforestation**
- **organic farming** and **revival of traditional practices**
- **rain water harvesting** and responsible use of water

Finally

"There is enough in this world for everyone's needs, not for everyone's greed."

Mahatma Gandhi

Sustainable Development is the alternative development trajectory that is viable in the long run. Moreover, it will correct the atrocities against nature committed during the early days of frenzied industrial development.

Successful implementation of this model, however, requires us to shed differences and work coherently at all levels – government, state machinery, civil society, and environmentalists.

After all, environment is a global concern and: *'in nature there are neither rewards nor punishments - only consequences.'*