Some Main Causes and Consequences of Environmental Pollution

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Abstract

The world famous physicist Stephen Hawking rightly suspected that human society may vanish from earth in next 200 years due to pollution. It is a severe warning for human society to act on rising level of the pollution. Human body took notice of such rising threat through several ways nationally and internationally. One such step was taken under guidance of IPCC to control and regulation global warming as well as pollution. This paper examines various cause and effect of different steps taken in this regard. The paper too looks lacuna in our strategy.

Keywords: Recycle, Waste Management, GHGs, De-forestation, Global Warming.

Introduction

The heat coming from the sun in the form of solar radiation is the main source of energy in the earth. About 30% of heat energy coming from the sun is reflected back to the space and the residual to the earth resulting the rise in temperature of the earth, oceans and land (i.e. the entire environment). The main cause of global warming is the presence of some Green House Gases (GHGs) for examples Carbon Dioxide (CO_2), Methane (CH_4), Nitrous Oxide (N_2O), and Water Vapour in the atmosphere. According to Intergovernmental Panel on Climate Change, IPCC 2001, during the period from 1750 to 2000 the atmospheric concentration of CO_2, CH_4 and N_2O has grown about 31%, 15% and 17% respectively. These GHGs absorb some heat and re-emit to the earth. Though the earth absorbs and releases heat simultaneously the rising heat is not lost to space equivalently as it is partly absorb by these GHGs and finally raises the global temperature. The recent estimate predicts that for uncontrolled carbon emissions cost the global economy more than $200 billion annually by 2030 unless the pollution levels are controlled. According to IPPC (2007) in its fourth assessment report noted that "changes in atmospheric concentrations of GHGs and aerosols, land cover and solar radiation alter the energy balance of climate system" and concluded that "increases in anthropogenic GHGs concentrations is very likely to have caused most within 20^{th} century.

The emission of CO_2 is one of the main causes of global warming among the greenhouse gases in the atmosphere. To reduce the CO_2 emission the Kyoto Protocol adopted a miracle strategy. A country which has an average emission reduction of 5.2% below (as compared to 1992 as a base period) has a legal right to sell it to other country or company that has not reduced it to the permissible limit. In India, some companies are able to emit less CO_2 to below their permissible limits and hence have a legally large potentiality in creating

surplus CO_2 and benefit from the international trade to earn foreign currency.

According to M S Swaminathan (2012), "What we need is a culture of do ecology i.e. meeting the needs of the current and future generations without ecological harm". In 2012 we have already passed the 40th anniversary of the UN conference held in Stockholm in1972 and 20th anniversary of the Rio de Janeiro in 1992. In Stockholm Indira Gandhi rightly added the dimension of social sustainability to the measurement of economic growth without harming the environment. She advised that to reduce pollution we must have to reduce poverty and unemployment. For example, unless we are in a position to provide employment and purchasing power for the daily necessities of the tribal people and those who live in or around our jungles, we cannot prevent them from the forest for food and livelihood or preserve animals which they have used for food. Thus It is not possible to use the scientific methods of green technology unless to eradicate poverty. Forests are destroyed by the greedy attack by the rich and the needs of the poor.

Sustainable development

Sustainable development is a pattern of resource use that aims to meet human needs while preserving the environment so that these needs can be met not only in the present, but also for future generations. The term was used by the Brundtland Commission which coined what has become the most often-quoted definition of sustainable development as development that "meets the needs of the present without compromising the ability of future generations to meet their own needs". It is usually noted that this requires the reconciliation of environmental, social and economic demands - the "three pillars" of sustainability. This view has been expressed as an illustration using three overlapping ellipses indicating that the three pillars of sustainability are not mutually exclusive and can be mutually reinforcing. Sustainable development ties together concern for the carrying capacity of natural systems with the social challenges facing humanity. As early as the 1970s "sustainability" was employed to describe an economy in equilibrium with basic ecological support systems [Wikipedia]. Sustainability is a dynamic concept born out of the environmental debate of the last quarter century. The important issue of the 21st century is to create greater economic and social wellbeing without harming our environmental resources. Sustainable development is a norm has been accepted in the literature ever since the publication of the Brundtland Commission report on 1987. A primary goal of sustainable development is to achieve a reasonable and equitable distributed level of economic wellbeing that can be perpetuated continually for next generation. Thus the field of sustainable development can be broken into three constituent parts i.e. environmental, economic and social sustainability. It is proved that socio- economic sustainability is depended on environmental sustainability because the socio- economic aspects, like agriculture, transport, settlement, and other demographic factors are born and raised up in the environmental system. All the environmental set up is depended on a piece of land where it exists. So, to get sustainable environmental management, sustainable land management is necessary.

World Scenarios

We see that CO2 emissions are one of the main causes of Global warming and it is threatening the existence of human society for a long. Hence many attempts have made by individuals and state both at regional and global level. The famous Rio earth summit held in 1992, the United Nations Framework Convention on Climate Change (UNFCCC) adopted an objective to reduce the GHGs at a manageable level such that the

climate system would be stable. Under UNFCCC (which came into effect on 21st March 1994) all the member countries were report on their national GHGs emissions inventories and propose climate change mitigation strategies. According to UNFCCC the industrialist countries are the main supplier of GHGs into the atmosphere. Another summit was held on 11th December 1997 in Kyoto, Japan where participated 160 countries in the world and adopted a miracle Protocol (commonly known as Kyoto Protocol) to reduce pollution for the human society. Under the Kyoto Protocol, each country has a predetermined target of emission reduction as compared to 1992 as the base period and an average reduction of 5.2% below the aggregate emission level at 1992 over the period 2008-2012. Naturally it divides the world into two parts: one is industrially developed which emits more CO_2 and another one is not so industrially developed and emits less CO_2. The main outcome of Kyoto Protocol is that the developed countries are agreed to limit their GHGs emissions or to pay price for that. As a result the country which is not so industrially developed has surplus CO_2 emissions as it lies below the border line. Then the country has a legal right to sale its surplus CO_2 to another country and it is just like the sell and get price for simple goods. This is the origin of Carbon Trading. At the same time it also encourages the country to reduce CO_2 emission to make pollution free environment. The companies in the developed world are requiring to certain carbon emission target set by their respective Government. But to rise their production these companies are not able to stay within this limit and an alternative way these companies purchase carbon credit from someone who is successful in meeting this limit and has a surplus carbon credit. China is the main contributor of GHGs with 19.5% followed by USA (19.2%), India (5.3%), Russia (5.1%), Japan (3.6%) and Germany (2.6%).

Various causes of pollution:

Water Scarcity

For agricultural production huge amount of water is required. In most of the developing countries, population is primarily engaged in agriculture which is the primary source of income to maintain their livelihood. Again agricultural production is the *gambling* of rainfall. To raise agricultural productivity various dams have been made in an unplanned way which have adversely affected to the commons and the environment. To control flood and supply irrigation water the construction of big dams have rarely helped. In villages for irrigation many tube-wells and submersibles have been installed in an unplanned way (it should not be bored less than 1000 feet) which use the ground- water in a massive scale and consume a huge amount of electricity. As population raises the scarcity of food grains rises. Food scarcity is highly positively-correlated with water scarcity. According to Lester Brown, “Water shortage may soon become food shortage”. Rice, wheat and sugar-cane together constitute 90% of total water consuming crops. Approximately 1000 tons of water is required to produce only one ton of wheat.

Land Degradation

Land degradation is another main cause of pollution. In the last few decades several measures have been adopted for increasing agricultural production which has adverse effects on natural environment. Fertility of land has been reduced due to over exploitation, excessive use of chemical fertilizers, insecticides and pesticides. Due to indiscriminate deforestation the amount of rainfall reduces and land erosion takes place.

Natural calamities like droughts, floods, cyclones, global warming, melting glaciers, raising sea level etc. are increasing and environment is degraded. As a result the production of food grains decreased and made food crisis at a global level. Here sustainable land management (SLM) is a necessary step to protect not only the present but also future generation.

Deforestation

Due to rapid growth of urbanization, industrialisation and growing need of paper etc demand for forest areas as well as forestry has gone up in many folds in the last four-five decades. Half of all tropical forest, which constitutes almost 50 percent of total forest cover area, has been destroyed by end of 2010 and three-quarters may be lost. Additionally, 20-50 % of global wetlands have been destroyed (54 % thus far in the US, with an additional 115000 acres/year). Loss of old growth forest has recently particularly affected the Pacific Northwest and British Columbia known as the "Brazil of the North", an allusion to the devastation wrought by the unsustainable, greedy logging practices of multinational corporations in the Amazon.

Solid Waste Pollution

Trash and garbage is a common sight in urban and rural areas of India. It is a major source of pollution. Indian cities alone generate more than 100 million tons of solid waste a year. Street corners are piled with trash. Public places and sidewalks are despoiled with filth and litter, rivers and canals act as garbage dumps. In part, India's garbage crisis is from rising consumption. India's waste problem also points to a stunning failure of governance. Managing large scale medical waste is now becoming another major challenge. Due to unregulated dumping of the medical waste are polluting land, water and air which are causing several severe diseases like cancer etc.

Industrialization

Rapid growth of industrialization in building roads, houses, factories etc is also the main cause of pollution. Most of the developing countries believe that industrialization is the only key indicator for economic development and increase in national income. Not only had that to make buildings and factories huge amount of bricks required. To produce this volume of land soil is definitely decreased and land is degraded. Normally industries are location in urban areas where population density is very high. Continuous failing in managing industrial pollution causes more damage to population in urban area because of high density of population. As per statistics about 24 % of global diseases and 23 % of premature death are mainly due to pollution.

Global Warming

The main cause of global warming is the increase in GHGs in the atmosphere. Due to increase in temperature the amount of ice in the glaciers has drastically fallen raising the sea level and some countries will be immersed under water and on the other hand the rivers, lakes and springs which are filled up by melting ice supplying water throughout the year will be dried up during summer and finally create water scarcity for irrigation and drinking purposes. It is expected that some countries in the world will immersed into water due

rise in sea level and finally decrease the available land for utilization purposes. Evidences indicate that scale and pace of climate change never witnessed in the history. Continuous rise in the global temperature breaks eco system, which long term severe impact on human and rest life.

Use of Fertilizers and Pesticides

To solve food crisis a major change in Indian agriculture occurred in the form of Green Revolution using Chemical fertilizers to agricultural land to increase land productivity. The excessive use of pesticides, fertilizers and HYV is an important factor for land degradation particularly salination, alkalization and finally the quality of land must be deteriorated. It is evident that Indian economy is based primarily on agriculture. But most of the land in the country is degrading and affecting the productive land resource of the economy. Besides the loss of nutrients from top soil, there is also degradation through the creation of gullies and ravines, which make the land unsuitable for agricultural production. This is the major evil effects of Green Revolution.

Energy Crisis

Crisis of energy is a global problem today. As the price of oil rises bio-fuel is used as an alternative source of fossil fuel. Bio-fuel is produced from agricultural produce like oil seeds, food grains. Apart from this food products are also used for extracting ethanol. The US utilized 20% of its corn in the year 2007 to 32% by the year 2016 to produce ethanol. As the price of crude oil raised the US has set a target for producing 25 billion gallons of bio-fuel in the next 10 years and Europe has set a target of 5.75% of its diesel needs extracting from plants 2011. The China is extracting ethanol not only from corn but even from rice and wheat. These tendencies of the developed countries are the main responsible for food crisis. This change in agricultural pattern from food production to commercial crop production has a negative effect on land degradation. Because to earn more profit more fertile land are used for commercial purposes using modern techniques of production and chemical fertilizers which deteriorated the quality of land, reduced forest area and cultivable land for food production and finally the quality of land must be lost.

Conclusion

India has several regulations concerning proper management of the different types of waste. Supreme Court passed an order in 2000 asking to implement comprehensive waste management programme touching all kind of wastes including giving priority to recycling and compositing. Every year lot of programmes are being organized by different stake holders including children making awareness of rising level of pollution and its severe impact on the human health and on entire eco system. Despite having a plethora of environmental regulations and several routine awareness programmes every year, intensity and scale of environmental is growing day by day. Thus, it is necessary to revise our strategy and programme to combat pollution. State as well as central government must re-look the environmental policies and population at large should also work in such way that future generation would have severe better life.

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