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Environmental Catastrophes: Man the Culprit

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Abstract

The environment is at the threshold of the major catastrophes; this is not unconnected with man and his activities. Sometimes man's disregard and ignorance can result in a redefinition of the quality of life on earth. Human activities have exposed many part of our natural environment to considerable risk. Scientific and technology advancement have been used to understand and harness the world's resources but not always to the greater benefit of mankind. Short –term economic gains tend to outweigh most other considerations. Agriculture, energy, manufacturing, transportation, exploration, housing/urban development, etc. are components contributing to global environmental problems such as climate change, deforestation, desertification, acid rain, erosion, ozone layer depletion, famine, diseases etc. This paper attempts to examine some of the enumerated consequences of man's activities and proffer solutions/suggestions on how to avert them.

Introduction

The increase in human population and the scale of their activities have resulted in distortion of the delicate balance of planet earth. Also man's disregard and ignorance have resulted in the redefinition of the quality of life on the earth. Human activities have exposed many parts of our natural

environment to considerable risks. Inventions that are hitherto helpful to people in the general may cause a multitude of related problems that affect multiple areas of life (Awake, 2003). Scientific and technological advancement have been used to understand and harness the world's resources but not always for the greater benefit of mankind. Human development reports 2001 states: "Every technological advancement brings potential benefits and risks, some of which are not easy to predict".

Industrial progress was meant to make our lives easier. In some ways it has, however, it is this very "progress" that aggravates the earth's environmental problems. Agriculture, energy, manufacturing, industry, transportation, housing/urban development exploration etc. are the major components contributing to the global environmental menace. Such environmental problems as climate change, deforestation, desertification, acid rain, erosion, ozone layer depletion, famine, diseases, toxic waste and extinction of species etc stare humanity in the face.

Environmental destruction is often tied up to with economic greed and materialism in the developed world, says world renowned scientist Jane Goodall (Awake, 2001). Ignorance, difference, poverty and greed produce inter- related problems that threatens and radically alter earth for the worse (Awake, 2001). Over one million people do not have access to safe drinking water. An estimated 3.4 million people die yearly from water related diseases. Air pollution kills an estimated of 2.7 million to 3.0 million people every year. It also adds that outdoor air pollution harms more than 1.1 billion people (Awake, 2002).

Industrialization, urbanization and modern transportation have contributed to a host of problems; one that is eminent is global warming. Experts believe that territories of the earth's forests will be stabilized and deforestation will be stopped only in 2020. Why? Because by this time, all accessible forests in developing countries will have been felled. It is worthy of note that fuel wood consumption accounts for about 80% of deforestation. Many experts believe that the biggest exchange of the twenty first century will be controlling the climate change. The protection of the climate, forests, rivers, soil and ultimately the environment will have to be a common endeavor.

HUMAN ACTIVITIES AND THEIR ATTENDANT CONSEQUENCES

The planet earth is at the verge of major catastrophes, below are some of the human activities that will lead to these environmental catastrophes.

Deforestation:

In the 1980's about 1/3rd of the earth's land was covered with forest. By the year 2000 forest lands had decreased by 23%. Wood is prime fuel for many of the world's poorest nations, 90% of the Sub-Saharan Africa population depends on wood for fuel (Edward et al 1998). Forest harvesting is already exceeding annual growth. An estimated 11million Ha/yr is being deforested and although logging and over grazing by livestock contributes to the problem. Most deforestation is due to fuel gathering (Edward and Peter, 1998). Edward and Peter (1998), reports that most of the rain forest will be gone by the turn of the century if this present trend continues. Nigeria has lost 90%, Ghana 80%, Brazil 98% of its coastal forests. Malaysia, Thailand Haiti and the Philippines have all but depleted their forests. In all, 144000 acres of tropical forests are being flattened each day with 16000 acres a day being destroyed in Central America.

Consequences / Implications of Deforestation

Deforestation could have the following consequences:

- Green house effect - this would lead to global climate change/global warming.
- Changes in rainfall pattern - this could lead to fall in agricultural yields, droughts and floods.
- Extinction of plants and animal species – this would lead to Destruction of the eco-system and biodiversity.
- Changes in agricultural yields - Agriculture will suffer great set-back due to soil erosion, loss of agric lands and desertification.
- Desertification – this could lead to food scarcity, hunger and famine and diseases.
- Energy generation problems – the silting of hydro electric dams could cause serious energy problems.

Climate Change:

Many experts believe that the biggest challenge of the 21st century will be controlling the climate change. There is a general agreement on the causes and mechanism of the so–called "green house effect". The observable increase in the amount of Carbon dioxide (CO_2) in the atmosphere is as a result of industrialization (manufacturing). Human activities release gases that have a warming effect such as CO_2, Methane (CH_4), Nitrous oxide (N_2O) and Tropospheric ozone (O_3), together with other potentially harmful chemicals including carbon tetrachloride, which was used extensively in dry cleaners.

Humans have been altering the chemical composition of the atmosphere by using innovations that spew out millions of tons of gases. These gases are said to cause what is called the green house effect, resulting in the warming of the atmosphere. Both the Intergovernmental Panel on Climate Change (IPCC) and the National Academy of Science (NAS) have agreed on three main points that relate to global warming (Claussen, 2002).

- The Earth is warming
- Human activity is largely responsible
- The warming trend is likely to accelerate in the years ahead.

Global warming (climate change) is due to industrialization and intensive agriculture, especially over the past 50years or so, where the environment was treated as a "free good" and not a composite asset. The fault though is not with industrialization or large scale Agriculture, but with our attitude to the environment. According to IPCC, It is possible the temperature could rise and as much as 3.5^{o}C within this century. (Mc Micheal et al, 1996)

Implications/ Consequences of climate change.

(i) Rise in sea level – This could lead to soil erosion, loss of wetland, flood in coastal areas and reduction in fresh water sources.
(ii) Changes in rainfall pattern.
(iii) Risk of extinction of vulnerable species/ loss of biodiversity.
(iv) Changes in agricultural yields.
(v) Incidences of infectious diseases.

Global warming could trigger a cascade of natural hazardous effects both directly through the meteorological processes associated to climate change, and indirectly because of rising sea level (see fig 1).

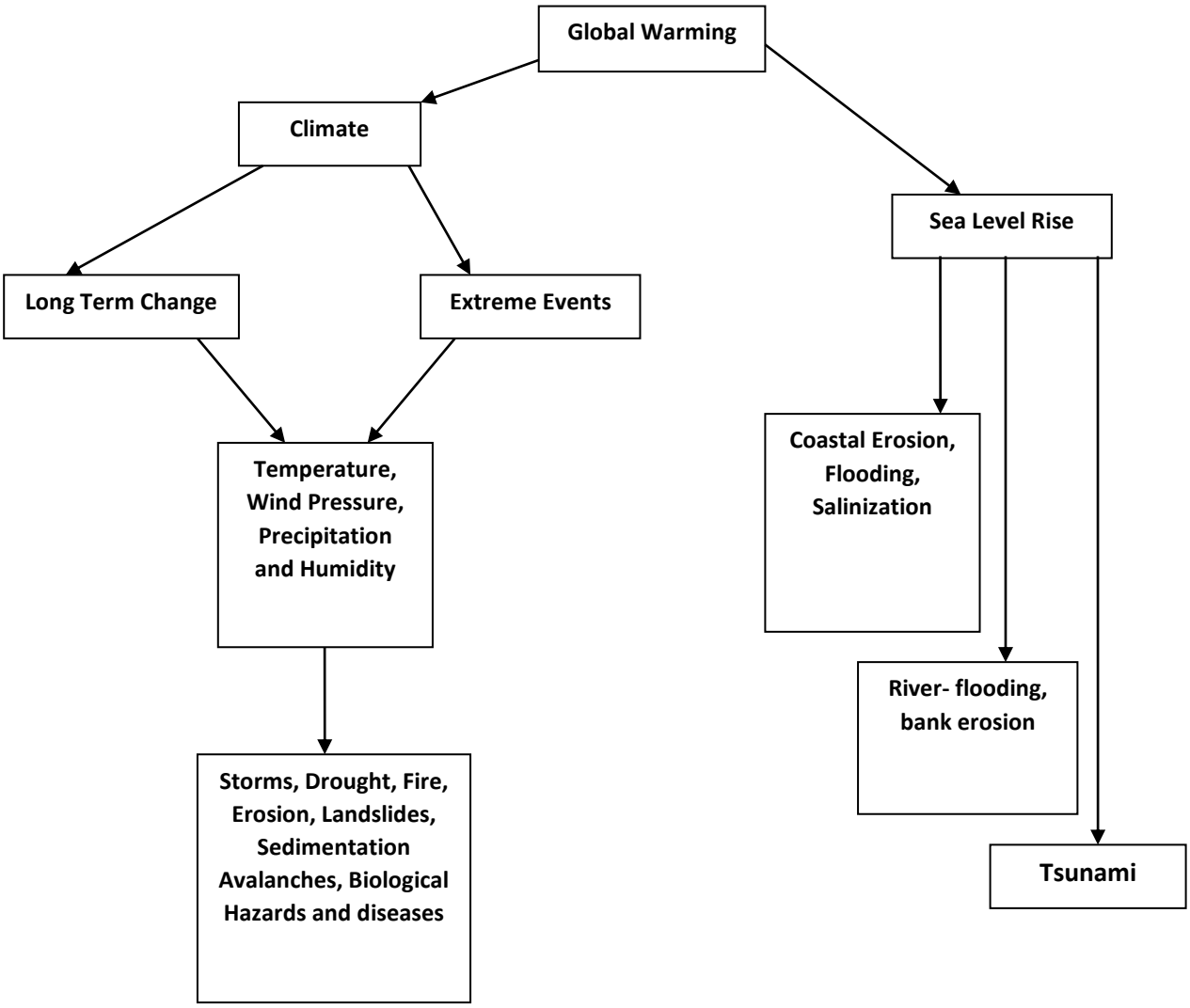

Fig.1 Global warming trigger cascade of hazard–effect both directly through the mechanism of climate change and indirectly via sea level rise after (Owen and Pickering 1998).

Other catastrophic consequences of climate change are desertification of semi-Arid regions, salinization of ground water reserves, destruction of agricultural lands through loss of ground moisture and erosion. Fig 1 summarizes the potential natural hazards due to global warming. Other consequences include the likelihood of death, injuries, resource shortages and enforced migration (Owen and Pickering, 1998).

Desertification:

After tropical forest is cleared, the soil erodes so much that within a few years the soil can no longer support plant growth and the areas revert to a desert. North Africa and Ethiopia are examples. Already a country like Mali is on the verge of economic collapse, each day many of its people need to sweep the encroaching desert sands from their door front. The potential for catastrophe from desertification in other nations looms very large (Edward and Peter, 1998).The consequences are Famine, hunger, diseases, economic collapse and enforced migration.

Acid Rain:

Some seemingly small build-ups of pollutants appear to have almost no impact at all for a while though. Then suddenly the ecological system "Snaps" and irreversible damage is observed. This is the cause of acid rain. Since the industrial revolution, smoke stack industries have dumped their waste (pollutants) into the Life supporting envelope of air that surrounds our planet Earth. The sulphur in the smoke reacts with atmospheric moisture to create sulphurous acid which then precipitates as acid rain (Owen and Pickering, 1998). Acid rain is reported to have killed all Life in lakes within a 25mile radius from a subterranean fire in Canada (Zajac, 1990). Acid rain is a serious international problem. Acid rain has lead the death of many lakes; New York Adirondack mountains have about 200 dead lakes, Eastern Canada has 4600 lakes that cannot support Life and Sweden has 9000 lakes that are dead or feared to be dying. Extensive forest losses are also reported in Poland, Germany, Russia and Czech Republic due to Acidic rain (Zajac, 1990).

Agriculture

The US department of Agriculture claims that one-third of all seeds planted are consumed before they sprout and one-third of all the produce grown is lost to bugs. This loss causes farmers to use more insecticides, pesticides and herbicides. This increased usage may compound the problems of cost, water pollution and food pollution. Some pesticides, insecticides or herbicides are toxic to humans and can cause death. As increased doses of insecticides or pesticides are used, more life forms of the food chain consumes increased amount of tainted bugs and are unintentionally killed. Then the pest/insect

problem worsen as the "good bugs" such as wasps ladybugs, spiders, and some higher life forms, such as insect eating bats and birds, succumb and even more crops are lost. At least 53 of the 300 pesticides used on food crops are carcinogenic. Half a million people globally are poisoned annually by pesticides/insecticides/herbicide - 10,000 of who die (Zajac, 1990). Agricultural activities contribute about 14% of the green house effect (Gwaram et al, 2001). The chemical used to increase Agricultural yields are washed into the sea or permeate into the water ground not only does this poison our drinking water but also affects the aquatic life. The biggest threat to the wildlife in forests, however, is, not logging, but changing woodlands over to agriculture. The attendant catastrophes are obvious.

Extinction of Species:

Researchers say that man is pushing species to extinction at an alarming rate. The rate of extinction by scientist have always varied, although, often disheartening. Some 50% of the world's flora and fauna could be on a path to extinction within a hundred years (Awake 2001). This could occur in the following ways:

- Habitat destruction: This is the leading cause of extinction. It includes logging, mining and exploration, land clearing, dredging etc. As the ecosystems shrinks, species lose the resources they need to survive. The natural environment is fragmented, degraded, distorted and eliminated. Migration routes are disrupted and genetic diversity diminishes. The extinction of certain species can even trigger a change of reaction of extinctions, for when one part of the web of Life is eliminated the others can be affected (Awake 2001). Extinction of keystones species such as pollinators can affect myriad of other species.
- Over exploration: this has led to the extinction of several species. A classic case is that of the passenger pigeon, once it was the most abundant bird in North America, today it is completely extinct (Awake, 2003). Also large sections of the ocean are over fished.
- Human population growth: Population explosion has led to specie extinction at an alarming rate. The human family in the mid-19th century had a population of one billion. Today we have gone beyond the six

billion mark. The increased human activities caused by increase in human population have led to the extinction of many species.

Ozone Layer Depletion:

The ozone layer shields or protects the earth from receiving infra-red rays directly to the earth. This layer is fast depleting. Ozone depleting substances (ODS) such as CFCS, HCFC etc. are continually being used by our quest for development. The developing nations are just getting to the phase of their development and as such are not ready to give–up its use for whatever reasons. Also the developed nation have not complied with the phase-out arrangement of the ODS. Montreal protocol (1989), Rio de Janeiro protocol (1990), and Kyoto protocol (1994) are just a mere formality as the substitutes for CFCs (CFC II); CFC 22 though less harmful or toxic than the CFC 11 still represents considerable threat. CFCs are used in major aerosol sprays, refrigerants, solvents and plastic foams.

THE WAY OUT

The ways out of this quagmire are suggested below.

(i) Sustainable management of our resources

(ii) Literacy and enlightenment campaigns on the consequences of man's disregardtowards the environment and its effects.

(iii) Orientation on the need to change our core values such as selfishness, greed, ignorance, short - sightedness and self-centeredness.

(iv) All phase-out declarations and resolutions should be adhered to strictly for compliance. The Copenhagen, Montreal, Rio de Janeiro and Kyoto protocols should be treated more seriously.

CONCLUSION

We all need an intact environment and ecosystem to provide essential services on which all living things depend. The production of oxygen, the purification of water, the filtering of pollutants, and the prevention of soil erosion and flooding are vital functions performed by an intact environment and ecosystem. Insects provide pollination services; Frogs, fishes, and birds control pests; mussels and other aquatic organisms cleanse our water supplies;

plants and microorganisms create our soils. The economic values of all these services are immense. A conservative estimate of the monetary benefits of biodiversity worldwide is put at about 5,000billion dollars per year. The consequences of global climate change, acid rain, deforestation, ozone layer depletion, specie extinction etc are readily obvious.

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