

Global Environmental Issues



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ABSTRACT

'Global Environmental Issues' is a phrase that refers to the effect on the climate of human actions, in particular the on fire of fossil fuels (coal, oil and gas) and large-scale deforestation, which cause emissions to the atmosphere of large amounts of 'greenhouse gases', of which the most important is carbon dioxide. Such gases take up infrared radiation emitted by the Earth's surface and act as blankets over the surface keeping it warmer than it would otherwise be. Connected with this warming are changes of climate. The basic science of the 'greenhouse effect' that leads to the warming is well implicit. More detailed understanding relies on numerical models of the climate that integrate the basic dynamical and physical equations describing the complete climate system. Many of the likely characteristics of the resulting changes in climate (such as more frequent heat waves, increases in rainfall, increase in frequency and intensity of many extreme climate events) can be identified. Substantial uncertainties remain in knowledge of some of the feedbacks within the climate system (that affect the overall magnitude of change) and in much of the detail of likely regional change. Because of its negative impacts on human communities (including for instance substantial sea-level rise) and on ecosystems, global warming is the most important environmental problem the world faces. Adaptation to the inevitable impacts and mitigation to reduce their magnitude are both necessary. International action is being taken by the world's scientific and political communities. Because of the need for urgent action, the greatest challenge is to move rapidly to much increased energy efficiency and to non-fossil-fuel energy sources. This paper presents the first broad based research on the impact of climate change on historic buildings, buried archaeology, parks and gardens Research coincided with the publication of the climate change scenarios and other studies assessing regional climate change and the impact on nature conservation and gardens.

Keywords: Environmental issues, Greenhouse effect, Crisis

INTRODUCTION

An Introduction to Global Environmental Issues presents a comprehensive and stimulating introduction to the key environmental issues presently threatening our global environment. Offering an authoritative introduction to the key topics, a source of latest environmental information, and an innovative stimulus for debate, this is an article for all those studying or concerned with global environmental issues. Major global environmental issues are brought into focus. Explanations of the evolution of the earth's natural systems (hydrosphere, biosphere, geosphere, ecosphere) provide an essential understanding of the scientific concepts, processes and historical background to environmental issues. Contemporary

socioeconomic, cultural and political considerations are explored and important conceptual approaches such as Gaian hypotheses and Chaos Theory are introduced. Human impact and management of the natural environment, and concerns for maintaining biodiversity are emphasized throughout. The rapid growing population and economic development is leading to a number of environmental issues in India because of the uncontrolled growth of urbanization and industrialization, expansion and massive intensification of agriculture, and the destruction of forests. Major environmental issues are forest and agricultural degradation of land, resource depletion (water, mineral, forest, sand, rocks etc.), environmental degradation, public health, loss of biodiversity, loss of resilience in ecosystems, livelihood security for the poor. It is estimated that the country's population will increase to about 1.26 billion by the year 2016. The projected population indicates that India will be the first most populous country in the world and China will be ranking second in the year 2050. India having 18% of the world's population on 2.4% of world's total area has greatly increased the pressure on its natural resources. Water shortages, soil exhaustion and erosion, deforestation, air and water pollution afflicts many areas. The condition of the environment is a worldwide issue [1]. Air and water pollution do not recognize borders; poor soil conditions in one nation may reduce another country's food supply. At the same time, different regions do face different problems. One key distinction is between the environmental threats faced by developed nations, such as the United States and western European countries, and developing nations, such as India and Mexico. Most agree that these nations may have dissimilar crises, but debate remains over whether the solutions to their problems are unique as well. The environmental problems faced by developed nations are largely the result of their economic strength and higher standards of living. Overconsumption is cited by many observers as a cause of resource depletion in the First World. Americans, and to a lesser extent western Europeans, Japanese, and other residents of developed nations, are more likely to own one or more cars, purchase more food and clothes than subsistence levels require, and use considerable amounts of electricity. Americans consume a disproportionate amount of the planet's resources. The United States is home to 5% of the world's population but uses 25% of its resources. Overall, the developed world has 23% of Earth's population but consumes two-thirds of the resources. Environmentalists contend that this high level of consumption will ultimately lead to the depletion of the planet's resources, resulting in adverse consequences for human populations. Developed nations have reduced their rate of population growth, so overpopulation is not as great a problem as it was previously considered to be; however, because of the high level of consumption, each new person in a developed nation will use three times as much water and ten times as much energy as a child born in a developing country. The industries needed to create products for consumption also affect the environment through the emission of greenhouse gases and other wastes. In contrast, the environmental crises faced by developing nations are the result of poverty. For example, Third World countries often lack the resources and sanitation facilities to provide the public with clean water. Tropical deforestation, caused by the slash-and-burn techniques of poor farmers, is another dilemma. However, as Rice University president Malcolm Gillis has observed, agriculture is not the only manifestation of the effects of poverty on deforestation. In most, but not all, poor nations, the role of poverty in deforestation is magnified by the ever-more-desperate search for fuel wood by impoverished people." This search for wood is exacerbated by the key environmental problem in developing nations—overpopulation. Third World nations may consume vastly less than America and Europe but their population growth rates are much higher. These nations lack the natural resources and social services that will be needed in order to

provide their burgeoning populations with adequate food, shelter, and employment in the coming years [2]. As developing nations move closer to First World status, the accompanying growth in industry could also affect the environment, especially through the emission of greenhouse gases. The global warming agreement reached in Kyoto, Japan, in December 1997 exempted developing nations such as China, India, and Mexico from requirements to reduce their emissions. But according to the United Nations, countries exempted from the agreement will create 76% of total greenhouse gas emissions over the next 50 years. The exemptions in the Kyoto agreement (which must be approved by 55 nations but as of this writing has not been submitted to the U.S. Senate for ratification) raise the question of whether developed and developing nations should utilize the same methods in order to conserve the environment. If the environment truly is a worldwide issue, then the solutions may also be universal. However, international agreement on environmental issues is often difficult to achieve because countries are not at equivalent stages of social and economic development. Developed nations rely significantly on government regulations to protect and restore the environment; however, many analysts-particularly Americans-believe that the same economic forces that create the wealth of developed countries can solve their environmental troubles. Industry, capitalism, and the free market system might create overconsumption, but they can also solve its ill effects, these commentators maintain. John Hood, the president of the John Locke Foundation, a policy institute that advocates the free market and limited government, writes, "Corporate America's unique contribution to solving real environmental problems will come from innovation-finding new ways to produce goods and services, package and deliver them to consumers, and dispose of or recycle the wastes generated by their own production or by consumption." In contrast, a system in which the government owns all the land or imposes strict command-and-control regulations on people and businesses is seen as ineffective. The poor environmental condition of communist nations is often cited by these observers as evidence of the inability of government regulations to conserve the environment. As developing nations grow and become more economically self-sufficient, industrial solutions may become more viable in those countries. However, many commentators assert that Third World and post-communist countries should not follow the United States' lead. These observers see industry as the planet's foe rather than its savior; they believe companies are more likely to be motivated by the quest for profit than a desire to preserve the environment. A better way to improve the environment is to rely on a country's indigenous values, many people maintain.

METHODOLOGY

The risks inherent in gathering and interpreting observed evidence made it essential to design a methodology that allowed access to a diverse range of sources, so that data could be verified before being accepted as evidence. The methodology made different types of data. Relevant data collected from printed materials, internet, books, journals, articles and thesis etc.,

Objectives

- To discuss the global environmental major issues
- To formulate the Problems faced by global warming and climatic changes
- To discuss the effects of global warming in India
- To discuss the climate change modeling and prediction

Global change scenarios

A brief summary of the status of global climate change predictions provides a context for subsequent discussions. We rely primarily on the work of the Intergovernmental Panel on Climate Change (78), and on MacCracken et al. (106), who combine discussions of model-based predictions and paleoclimate records. This is a rapidly developing field. Although the detailed predictions derived from general circulation models doubt in a qualitative sense that the increased and still-increasing concentrations of radiatively active gases in the atmosphere will result in significant climate change of some sort. Under the IPCC "Business as Usual" scenario (i.e. no substantial changes in present trends in greenhouse gas emissions), global mean temperatures are predicted to increase during the next century by about 0.3°C per decade (range: 0.2- 0.5°). The net increase will amount to about 10 by 2030 and 30 by 2100. Land surfaces will warm faster than oceans, and high northern latitudes will warm more and faster than the global mean, especially in winter. Present confidence in regional climate change predictions is low. In the oceanic tropics, the area of most interest to this review, the predictive ability of the general circulation models is highly questionable; both between-model agreement and calibration against present conditions are poor. Some models predict tropical sea-surface temperature increases of 1-3°C, but there is widespread debate about possible feedback mechanisms that might either stabilize values in the vicinity of 30-31°C (73, 123), or produce positive temperature feedbacks over the warmest part of the ocean (54). Although paleoclimatic conditions are not generally considered reliable predictors of future climate patterns, it may be relevant that during the Eemian warm period (125,000 BP) most northern hemisphere land areas were significantly warmer than at present, but tropical regions were not detectably warmer (106, 127). Also under the IPCC Business-as-Usual Scenario, global sea level rise is predicted to average about 6 cm/decade over the next century (range: 3-10 cm/decade); this value compares with recently observed values of 1-2 cm/decade, and with maximum sustained rates of sea level rise during the Holocene transgression in excess of 20 cm/decade (7, 51). Changes in the frequency and intensity of extreme events are probably more ecologically significant than moderate changes in the mean values of environmental factors. In addition to a probable increase in high-temperature events, two possible changes relevant to local coral reef environments are worthy of note (110). One is a shift in precipitation patterns so that more of the total precipitation falls during heavy storms; the other is a possible change in the frequency, magnitude, or geographic distribution of major tropical storms.

Global environmental major issues

One of the primary causes of environmental degradation in a country could be attributed to rapid growth of population, which adversely affects the natural resources and environment. The uprising population and the environmental deterioration face the challenge of sustainable development. 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 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 [3]. 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 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.

Global environmental problems

At the dawn of the third millennium, a powerful and complex web of interactions is contributing to unprecedented global trends in environmental degradation. These forces include rapid globalization and urbanization, pervasive poverty, unsustainable consumption patterns and population growth. Often serving to compound the effects and intensity of the environmental problems described in the previous section, global environmental challenges require concerted responses on the part of the international community. Global climate change, the depletion of the ozone layer, desertification, deforestation, the loss of the planet's biological diversity and the trans boundary movements of hazardous wastes and chemicals are all environmental problems that touch every nation and adversely affect the lives and health of their populations. As with other environment-related challenges, children are disproportionately vulnerable to and suffer most from the effects of these global trends. Moreover, all of these global environmental trends have long-term effects on people and societies and are either difficult or impossible to reverse over the period of one generation. Unless, effective global actions are taken early, we will end up plundering our children's heritage and future in an unprecedented way. This chapter describes five major global environmental problems and points to the potential impact on children and future generations.

Progress in global environmental change

Since 1990 global population has grown from roughly 5.3 to 6.8 billion and sustained global economic growth, accompanied by total and per capita increases in consumption in many parts of the world, not least in Brazil, Russia, India and China. However, our world remains riven by differences in access to resources and per capita consumption both between and within countries. A review of the most highly cited papers in this journal shows significant contributions across five broad themes: the drivers and impacts of systemic and cumulative change, cross-cutting concepts such as vulnerability and resilience,

approaches to management, control and policy, and different perspectives on climate change . The scientific community has clearly documented and quantified global environmental change with increasing precision and improved models to understand the future consequences of our actions, although large uncertainties remain. The community has also developed tools to quantify our footprints and the effects of our lifestyles beyond our immediate surroundings (Rees, 1992; Hoekstra and Hung, 2005) and we have far greater potential to understand our interconnectedness across scales, in both biophysical and socioeconomic terms, which as Rifkin (2009) suggests may cultivate increased empathy. But it is perhaps at the interface between individual and collective perceptions and action that research has progressed the least but where there is the greatest potential to address the challenges we understand so well. Interdisciplinary research on global environmental change must engage further with psychological and behavioral sciences and ethics to understand motivation and behavioral change in its socio-economic and political context and the forms of institutions and governance that can foster new technologies and ideas of progress.

Environmental issues at global level

- Depletion of natural resources
- Water pollution
- Air pollution
- Ground water pollution
- Toxic chemicals & soil pollution
- Ozone layer depletion
- Global warming
- Loss of bio-diversity
- Extinction of wildlife and loss of natural habitat
- Nuclear wastes and radiation issues

Global environmental issues list

If asked what are the global environmental issues that the planet faces today, most people out there wouldn't be able to go beyond global warming and energy crisis. These people are not aware of the fact that there are several other issues of global concern, each of which is equally hazardous. More importantly, all these issues are related with each other by some or the other way, and hence, tackling them one by one has just become difficult

Climate change

Climate change has become more than obvious over the past decade, with nine years of the decade making it to the list of hottest years the planet has ever witnessed. The rise in temperature has also ensured that the equations on the planet have gone for a toss. Some of the most obvious signs of this include irregularities in weather, frequent storms, melting glaciers, rising levels of sea etc. Going by the prevailing conditions, it is not difficult to anticipate that the planet is heading for a dramatic climate change, some wherein, near, future.

Conservation of species

Yet another global environmental issue, species conservation basically deals with conservation of flora and fauna, in order to curb the extinction of species. Extinction of a single species of plant or animal results in a dramatic imbalance in the ecosystem, as a number of other species dependent on it directly or indirectly are also affected. Over the last century or so, several plants and animal species have become extinct thus resulting in a major loss for the biodiversity of the planet

Energy crisis

The fact that we are largely dependent on fossil fuels for our energy requirements has made us significantly vulnerable to severe energy crisis. Though, quite a few renewable energy sources have been identified, none of them have been promising enough when it comes to replacement of fossil fuels as the major source of energy for mankind. Attempts to tap the full potential of these sources are in progress, and our future by and large depends on these attempts, as fossil fuels are on the verge of exhaustion

Exploitation of natural resources

Our greed for more has left us empty handed in terms of natural resources in several parts of the world. Several human activities, including the likes of mining, agriculture, fishing etc., has resulted in drastic degradation of our natural resources. While mining and agriculture have triggered large-scale deforestation, over fishing has only resulted in the reduction of population of marine creatures inhabiting the planet. If the trends continue, we are bound to exhaust those natural resources on which we are dependent, and thus dig our own graves.

Land degradation

Land pollution, owing to human activities, and desertification, due to loss of vegetation has left the surface of the planet unsuitable for human use. Land degradation can be attributed to the fact that we have become too laid-back in terms preservation of the nature. Improper soil use, haphazard waste disposal, large-scale deforestation and other such human activities harmful for nature are on the rise, something which is invariably taking a toll on our natural surroundings

Land use

Global environmental problems pertaining to the land are not just restricted to haphazard waste disposal or large-scale deforestation, but also to improper use of land. Natural environment is being destructed to make way for urban sprawl, which is indirectly resulting in loss of habitat for several species. Fragmentation of land owing to construction is also a major factor when it comes to improper land use. All these factors together result in several problems, including soil erosion, degradation of land and desertification.

Nuclear issues

Nuclear power does have high potential, but the problems associated with it are no less. Radioactive waste from nuclear power plants is one of the major problems we are likely to face, especially if safety regulations are not followed properly. Chernobyl tragedy has set an example of how nuclear waste can lead to disaster for mankind, and no one would like to see another Chernobyl happening. It doesn't end here as the threat of some nation diverting its nuclear power to produce nuclear arsenal is always looming over the mankind. And it won't take an Einstein to imagine the amount of damage these nuclear weapons would cause.

Climate Change Modeling and Prediction

Climate change predictions are based on climate models which are constructed from studies of the current climate system, including atmosphere, ocean, land surface, cryosphere and biosphere, and the factors that influence it such as greenhouse gas emissions and future socio-economic patterns of land use. A climate model is a mathematical formulation of the effects of all the key processes operating in the climate system and the effectiveness of any particular model is assessed by seeing how well it reproduces past climate behavior. Additionally, extrapolating the models to future climates incorporates not only the scientific uncertainties inbuilt in modeling complex weather systems, it implies that the broad operation of the climate system will remain constant and not undergo dramatic shifts and the much less quantifiable uncertainties in future emissions and land use. Advanced global models typically have a coarse resolution which does not allow for useful local climate change projections where local weather is heavily influenced by local topography and land use [6]. More detailed Regional Climate Models (RCMs) are constructed for limited areas and shorter time periods. The confidence levels in the key predictions are qualitative because they are based on expert understanding of complex science, observed data, the ability to predict and the consistency of the model. Focusing on the high confidence projections for future, the India is likely to experience a rise in temperature, an increase in variability leading to some very warm years, and an increase in wetter winters everywhere; greater contrast between summer and winter seasons and a decrease in soil moisture levels in summer and winter. Increased regional differences in sea level rises and a significant decrease in snowfalls in North-east India. India is a paradise tourist destination. It has historical, cultural, and artistic importance, but has a climate problem. Tourists need guidelines about the climatic conditions in whole India it will be helpful to them to visit most of the destination in short period.

Loss of Biodiversity

One hundred and fifty years ago, the Native American leader, Chief Seattle, is reported to have said we humans are but a thread in the web of life. He added, whatever we do to the web, "We do to ourselves."The web is unraveling at an increasing rate. Both plant and animal species have been disappearing at 50 to 100 times the natural rate, due to such factors as the large-scale clearing and burning of forests, over-harvesting of plants and animals, indiscriminate use of pesticides, draining and filling of wetlands, destructive fishing practices, air pollution and the conversion of wild lands to agricultural and urban uses. Recent studies suggest that this high rate of extinction will accelerate even faster, taking an increasing number of living plants and animals away from us forever. This species loss and ecosystem disruption is causing a complex range of circumstances with consequences to human health. In response, governments and communities worldwide are now concerned with the purification of air and water, maintenance of soil fertility, mitigation of floods and droughts, detoxification and decomposition of wastes, maintaining concentrations of vital gases and water vapor in the atmosphere, and controlling infectious agents in the environment. In addition, the loss of biodiversity obstructs the discovery of new medicines to treat various diseases. Another emerging modern health concern is biosafety and the effects of advances in and increased use of biotechnology to genetically modify foods. Public concern about the health and ecological risks of foods made with biotechnology has intensified in Europe and has spread rapidly to other parts of the world, including the United States. Proponents contend that biotechnology could help feed the developing world, cut costs, and reduce the need for

pesticides. Detractors say the health risks of the emerging technology are unclear and the environmental hazards potentially alarming. Research is proceeding in order to respond to the many health and environmental questions raised and to guide eventual biotechnology regulations. The United Nations Convention on Biological Diversity (UNCBD), which was adopted at UNCED in 1992 and has since been ratified by more than 175 countries, establishes three main goals: the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of the benefits from the use of genetic resources. In May 2000, the Convention's Cartagena Protocol on Biosafety was opened for signature. The Protocol seeks to protect the planet's species and ecosystems from the potential risks posed by living modified organisms, commonly referred to as genetically modified organisms, and to establish an advanced informed agreement procedure for ensuring that countries are provided with the information necessary to make informed decisions before agreeing to the import of such organisms. The Protocol has been hailed as a breakthrough from a health and environment perspective in that it is the first global treaty that formally enshrines the "precautionary approach", as set forth in the 1992 Rio Declaration on Environment and Development, as a principle of international environmental law.

CONCLUSION

Global climate change is causing these areas to experience an increasingly sparse and erratic rainfall pattern and a lengthened dry season, affecting the livelihoods of thousands of villagers, some areas are also facing water shortages. People are becoming aware of sick of global warming, so they cultivate more and more trees, planting mangrove forest by the sites of the coastal areas and reduce the usage of plastic. They have sowed more than 12 million seeds & half a million of plants. Planting trees balances carbon emissions and pollution. There are organizations that will help you offset your carbon footprint. The deforestation comes in a close second in causes for global warming. There is still much that is unknown about the potential health effects of global climate change. The various phenomena that can be said to contribute to the rubric include stratospheric ozone depletion, global warming, acid aerosol formation, desertification, and deforestation. At the current time, these phenomena are being investigated separately, yet the case can and should be made that these things are happening concurrently and there are many instances where interactions are possible as well as likely. Thus, a more global view is required, particularly with regard to the science, but also with regard to policy. These phenomena are not occurring independently, and to analyze them and try to develop responses to them as though they were seems an exercise designed to fall short of the optimum solution. Although it is sometimes helpful to divide a problem into components in order to analyze what contributions are made by the various pieces, at some point the analyst has to reassemble the parts and look for the sum of the effects. This has not yet been done in the public health arena regarding global climate change, and there is very little evidence that it is being done in other important areas such as agriculture and natural resources. At last, global warming can be dealt with only through international agreement. The context is one of game theory, and the stressing need is to design incentive systems for global cooperation. The Montreal protocol on ozone may be an ineffective guide to the prospects for a greenhouse agreement. The most urgent need is to develop appropriate policy instruments and compensatory mechanisms for the best results. The growing recognition that greenhouse gas reductions are not the only option we have to slow and ultimately reverse global warming. Restoring and expanding global forests can also cool the planet

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