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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 socio-economic, 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

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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. For example, some environmentalists believe that the religious traditions of India promote ecologically friendly values, including vegetarianism and a moderate use of resources. They also prefer traditional agricultural methods, which do not rely on pesticides and chemical fertilizers and therefore do not cause groundwater pollution. Frances Cairncross, a senior editor at the Economist, is among those who argue that if industry is to be relied upon, it should be as environmentally advanced as possible: "Industry in the developing countries has a special opportunity. Because it is making new, 'Greenfield' investments [investing in undeveloped and often unpolluted land], it can leap a stage and go straight to the best modern practice".

As noted earlier, the Kyoto global warming agreement reveals the difficulty of finding universal solutions to environmental problems. Developing nations would not consider even voluntary participation in emission reduction, arguing that such measures would impede their efforts to improve their economies and industries. Even within developed nations, the response to the treaty has varied. In June 1998, the European Union reached an agreement that will reduce their greenhouse gas emissions by 8%. However, many people in the United States have more negative attitudes toward the agreement; they assert that achieving the reduced emission levels could hurt the nation's economy. For example, some American analysts contend, companies might move their plants to developing nations, causing job losses in the United States. Moreover, they argue, emission controls could cause U.S. oil and gas prices to rise. Although the Clinton administration played a key role in reaching an agreement in Kyoto, President Bill Clinton is among those who believe developing countries need to limit their own greenhouse gases before the United States can ratify the treaty. Without the participation of the United States-the world's leading polluter-the treaty might not succeed. As the Kyoto controversy suggests, international agreement over solutions to global environmental problems is not easily attained. The debate over environmental issues in the United States is also divisive. These global and national debates are the subject of Conserving the Environment: Current Controversies. the authors examine such topics as the state of the environment, the preservation of biodiversity, methods for reducing pollution, and whether the free-market system can solve environmental problems.

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 are uncertain and subject to revision, there can be little 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 mal-distribution 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 km^2). 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 transboundary 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 [4]. 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 socio-economic 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.

Overpopulation: Yet another major global environmental issue is overpopulation. As the population of world continues to soar at an alarming rate, the pressure on the resources of the planet is increasing. These problems associated with overpopulation range from food and water crisis to lack of space for natural burial. Overpopulation also results in various other demographic hazards. Incessant population growth will not just result in depletion of natural resources, but will also put more pressure on the economy. After all sustaining a huge population requires quite a mammoth effort for a nation, as far as finance is concerned.

Pollution: This is perhaps the most obvious, yet most ignored global environmental issue in this list of environmental problems. The term 'population' in itself have several other aspects, prominent ones among which include air pollution, water pollution and land pollution. On one hand air pollution can be attributed to the large amount of carbon dioxide pumped into the atmosphere by industries and vehicles, water pollution and land pollution is caused as a result of waste disposal from factories, oil-carrying vessels etc. Basically, mankind is to be blamed for this issue as our activities tend to hamper the environment at an alarming rate. If this trend continues, we will be very soon left without any fresh air to breathe, and clean water to drink.

Waste management: As population increases, human activities increase, which eventually increases the amount of waste produced. This waste doesn't just include those harmful gases let out in the atmosphere or toxic waste released in water bodies, but also includes nuclear waste, e-waste, medical waste (Abhijit Naik) and even the waste

from our homes. With limited area available on the planet, and most of it being inhabited by us, we are left with no space to dispose this waste. The rate at which this waste is produced is far more than the rate at which it is being treated, and this just results in piling up of waste, which eventually pollutes the environment.

These were some of the major global environmental issues and problems which have been threatening the planet for quite some time now. However, the environmental issues the planet faces today are not just restricted to the list given above. Several issues, including problems due to construction of dams, genetic pollution, nanotoxicology, etc., are surfacing every other day, thus making the list of global environmental issues longer with time. If we don't start attending to these issues one by one, the moment is not far when we will have no option left but to surrender to these environmental issues.

Ecosystem Roles and Responses

Ecosystems and their responses to environmental change may play various roles in a climate and global change context. Ecological control of reservoir size or rates of flux for climate-influencing materials such as C02 is a potentially important factor. In relation to human society, ecosystem sensitivity-or-vulnerability is an important issue; ecosystem collapse in response to environmental change may result in loss of resources; degradation could, in principle, serve as an early warning of increasing stress. From a scientific standpoint, large-scale environmental changes represent a natural experiment that may permit investigation and understanding of ecosystem structure and function not possible on a laboratory scale or in a stable environment. In this section we discuss these three issues before turning to a more detailed inventory of coral reef responses to individual environmental forcing functions.

Historical Climate Records

Historical evidences are very important to get some information about contemporary climate change. However, these evidences are generally found scattered in many places and languages with varied interpretation, information is vague and fragmentary. A systematic and logical approach in interpreting historical evidences is crucial to extract valuable information on past climate. Historical records in India and China are relatively long compared to other parts of Asia and provide informative evidences of past climate. In India, the monsoon and related events find an important place in folklores and written documents. Ancient literature is replete with references to monsoons and the famines which occurred due to the failure of the monsoon (e.g., Yaksha's Nirukta, Valmiki's Ramayana, Jataka series of the Budhists, Chanakya's Arthasastra, etc.). Meghdoot by the famous Sanskrit scholar Kalidas is a legendary epic describing the Indian monsoon clouds and the onset of the monsoon over Central India which is said to be occurring over the region in the middle of June. This also describes the monsoon current as a messenger from the peninsula to the Himalayas at low levels returning at the higher levels [5]. There are indications that the northern, desert-margins-edge of the monsoon, in the northwest part of South Asia, underwent wide fluctuations leading to the appearance and disappearance of human civilizations in the region. The Harappan civilization of the Indus valley flourished during the period 2300 to 1700 BC, the Painted-Gray-Ware culture between 700 and 300 BC, and the Rangamahal culture between 100 and 200 AD. Ramaswamy (1968), commenting on the good monsoon regimes in northwest India, has postulated that during the period 2000-500 BC deep troughs in the upper westerly's may have extended into Pakistan more frequently than now, causing monsoon depressions to curve to the north or northeast, leading to active monsoon conditions over the entire Indus valley. Historical climate evidences are mostly related to monsoonal rain, for example, occurrence of drought or flood, no harvesting due to lack of rain or good grain production and so on. Pant et al. (1993) made systematic efforts to extract climate related information for the last 1000 years from historical records of various climatic zones of India. Many historical evidences are indicative of droughts and floods leading to famine conditions. Relatively low frequency of occurrence of droughts was observed during AD 900-1600. This may be due to less availability of related historical information that accounts only for severe and significant events. Since AD 1600 frequency is relatively higher and drought events are more or less randomly distributed.

Climate Change

It is now widely recognized that global warming over the past 50 years is largely due to human activities that have released green- house gases into the atmosphere. The most recent assessment report by the Intergovernmental Panel on Climate Change (IPCC) concludes that the global average surface temperature has increased by about 0.6°C during the 20th century. The seemingly small rise of mean temperature is already showing adverse effects. One of the consequences has been a rise in the global average sea level Another effect has been more frequent and intensified droughts in recent decades in parts of Asia and Africa. Additionally, in most mid and high latitudes of the Northern Hemisphere continents, precipitation has increased by 0.5 to 1.0 per cent per decade in the 20th century. The world's emissions of greenhouse gases, notably carbon dioxide, continue to increase. The most recent estimates are that atmospheric concentrations of the greenhouse gas carbon dioxide (CO_2) will double or triple pre-industrial levels by the end of this century. As a result, global surface temperature is expected to increase by 1.4 to 5.8 degrees Celsius from 1990 to 2100 The repercussions of climate change will disproportionately affect those who are least able to adapt - the poor and the most vulnerable sections of society, including children. For example, scientists project that this level of warming could, among other things:

- Greatly exacerbate the range, frequency and intensity of natural disasters, from flooding, to droughts, to torrential rains, ice-storms, tornadoes and hurricanes;
- Cause sea levels to rise by between nine and 80 centimeters by 2100 due to the expansion of warming waters and the melting of polar icecaps and other glaciers, which in turn may produce deadly flooding in many low-lying areas and small island States, displacing millions from their homes;
- Increase the number of environmental refugees resulting from weather-related disasters;
- Augment the risk of disease migration and disease out-breaks; and
- Render large areas of the world "uninsurable" due to the magnitude of property damage from disasters.

It is widely recognized that climate change, by altering local weather patterns and by disturbing life-supporting natural systems and processes, has significant implications for human health. While the range of health effects is diverse, often unpredictable in magnitude, and sometimes slow to emerge, children remain among the most vulnerable to these threats. Higher temperatures, heavier rainfall, and changes in climate variability would encourage vectors of some infectious diseases (such as malaria, schistosomiasis, dengue fever, yellow fever and encephalitis) to multiply and expand into new geographical regions, intensifying the already overwhelming threats to children from such

diseases. There is also evidence that El Niño - a vast natural climatic phenomenon that can bring intense floods and droughts in many parts of the globe - is becoming more frequent as a result of global warming and could further aggravate health problems in many parts of the world. Excessive flooding is, for example, a prime cause of cholera and other water-borne and food-borne infections to which children are particularly susceptible. While heavy rains will become more frequent, there will also be more periods of drought and increased spreading of the deserts. Scientists predict that a lack of rain, warmer temperatures and increases in evaporation could have severe implications in terms of water availability and food security, reducing crop yields in Africa, further compromising child nutrition. There are also numerous health effects, both in terms of disease and injury, associated with extreme weather events, such as heat waves, storms and floods. Extreme weather events can exacerbate health issues such as asthma and respiratory problems due to worsening air pollution, precisely those diseases that most significantly burden children.

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.

Ozone Layer Depletion

Ozone in the atmosphere's upper layer, the stratosphere, protects humans, animals and plants from the damaging effects of UV-B radiation from the sun. Without it, all life on earth would cease to exist. However, the use of chlorofluorocarbons (CFCs) and other Ozone-Depleting Substances (ODS) are slowly eating away at the stratospheric ozone layer, creating a major potential health hazard. While the concentrations of ODS in the lower atmosphere peaked in about 1994 and is now slowly declining due to worldwide efforts to phase out the use of CFCs and other damaging sub- stances, significant health threats relating to ozone depletion persist.

Past (and current) emissions of ODS result in increases of ultra-violet radiation reaching the Earth's surface which can pose sever- al health effects

- Increase of melanoma and non-melanoma skin cancers;
- Cause or acceleration of eye cataracts development;
- Reduce effectiveness of the immune system;
- Impact on nutrition (e.g. reduced plant yield);
- Damage to ocean ecosystems and reduced fish yield (by killing microbial organisms in the ocean).

Skin cancer is the most worrisome health impact of ozone depletion. Overexposure to the sun's harmful Ultra-Violet (UV) light may damage children's skin. Recent studies indicate that excessive sunburns experienced by children 10 to 15 years of age increase by threefold the chance of developing malignant melanoma, the most deadly kind of skin cancer, later in life In Europe, evaluations of ultraviolet-related skin cancers suggest that, despite the decline in ODS concentrations, skin cancer incidences will not begin to fall until about 2060.The international response to this issue is embodied in the Convention for the Protection of the Ozone Layer, which was concluded in Vienna in 1985. The Vienna Convention set an important precedent because nations for the first time agreed in principle to tackle a global environmental problem before its effects were felt. The Convention's 1987 Montreal Protocol on Substances that Deplete the Ozone Layer has been remarkably successful. Production of the most damaging ozone-depleting substances was eliminated, except for a few critical uses, by 1996 in developed countries and should be phased out by 2010 in developing countries. Thanks to these measures, it is currently estimated the CFC concentration in the ozone layer is expected to recover to pre-1980 levels by the year 2050.

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 ate 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 [7]. 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 sig- nature. 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 organ- isms, 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.

Strategies for Adapting Cultural Heritage to Climate Change

Planning time-scales

Convincing policy makers to include climate change impacts in planning and moreover cultural heritage can be difficult. This 'long view' is vindicated by the emphasis on preparation and adaptation in the Third Assessment Report of the United Nations Intergovernmental Panel on Climate Change which advises policy makers that adaptation is a necessary strategy at all scales to complement climate change mitigation efforts and that 'Adaptation has the potential to reduce adverse impacts of climate change and to enhance beneficial impacts, but will incur costs and will not prevent all damages'. Heritage professionals can make a positive contribution to longer-term planning for climate change by other authorities can ensure that cultural heritage is integrated into these plans and more specifically in conservation plans directly affecting cultural heritage. However, caution must be exercised as confidence in longer-term predictions is lower overall than short-term predictions.

Monitoring, management and maintenance

The paper did not reveal new problems for cultural heritage but it drew attention to long standing conservation issues. Maintenance and condition monitoring will become more critical as climate change takes effect. Where there is concern that drainage and rainwater disposal systems in historic buildings may not have the capacity to deal with torrential rain, it will be important to keep all gutters, hoppers and down pipes, even the most difficult and inaccessible, meticulously clean so that an increase in rainfall can flow away safely. Significantly, there was agreement among heritage experts and managers that non-invasive or concealed improvements might not be possible, requiring difficult choices on what to sacrifice and a preference for funding to be directed towards maintenance instead of new building work.

Loss and obsolescence

The issue of acceptance of loss of some heritage elements to save the rest was raised in the context of coastal archaeological sites. One heritage manager stated: 'We'll never save everything, so hard decisions are needed as to which to let go' with an emphasis on assessments of value, significance and life expectancy. There was a different view from some stewards of the natural environment with measures being taken to reverse the loss of natural habitats by reinstating salt marshes in India. The environmental obsolescence was raised for ageing buildings that will need adapting to survive climate change and to remain relevant to modern use. As the historic building fabric interacts with rather than excludes moisture, the issue that needs addressing is whether there might ever be sound environmental reasons for demolition.

Policy actions

In conclusion, several key policy recommendations emerged from the research to indicate the way forward for understanding the impact of climate change on cultural heritage.

Cooperation

The different strands of cultural heritage need to cooperate, share information and speak with unity on the issue of climate change and that there are benefits from integration with the natural environment. Cultural heritage cannot stand alone and that common concerns are an opportunity for cross-disciplinary cooperation.

Funding

Maintenance emerged as a key concern, necessitating a more equitable balance between funding for repair and maintenance, tax incentives for sustainable maintenance, the formation of partnerships with other interested parties such as the insurance industry and support for skills training for upgrading, repairing and maintaining cultural heritage.

Research

The lack of good data on the effects of environmental change and the lack of understanding of the behavior of the materials worsening with the shift of climate goal posts was a significant issue. Research is needed on monitoring change and developing appropriate sustainability indicators, with outputs being used to drive policy, develop strategies and disseminate knowledge and awareness.

Education

Education on global warming for must begin from their parents and teachers. Even now the media are educating global warming for students by airing television shows such as National Geographic. In addition, museums and exhibitions also show and educate adults and children about the adverse effects of global warming. Educate them how to organize their trash to recycle and save energy consumption is another way to teach global warming for. This will encourage your children to be more aware of the effects of global warming. The public needs educating on the impact of climate change on cultural heritage and on the importance of cultural heritage as a climate change indicator. At a local level, site logbooks are needed to record impacts of climate change as part of the implementation of conservation plans. At an international level, a mechanism for sharing knowledge and experience would enable information, resources and good examples of adaptation to be shared.

Report from the UN Office for the Coordination of Humanitarian Affairs (OCHA)

Climate disasters are on the rise. Around 70% of disasters are now climate related - up from around 50% from two decades ago. These disasters take a heavier human toll and come with a higher price tag. In the last decade, 2.4 billion people were affected by climate related disasters, compared to 1.7 billion in the previous decade. The cost of responding to disasters has risen tenfold between 1992 and 2008. Destructive sudden heavy rains, intense tropical storms, repeated

flooding and droughts are likely to increase, as will the vulnerability of local communities in the absence of strong concerted action. Climate change is not just a distant future threat [8]. It is the main driver behind rising humanitarian needs and we are seeing its impact. The number of people affected and the damages inflicted by extreme weather has been unprecedented. Unless we can reduce the amount of carbon dioxide in the atmosphere to 350 parts per million, we will cause huge and irreversible damage to the earth. (350.org)

Global Warming

Global warming is the unusually rapid increase in Earth's average surface temperature over the past century primarily due to the greenhouse gases released by people burning fossil fuels. Archaeological sites and some buildings have survived at least two periods of global warming and intervening cold periods. With international scientific evidence mounting and the reliability of future climate predictions increasing. Heritage commissioned research to gather evidence on climate change as a possible cause of environmental instability of cultural heritage and to inform present and future planning (Figure 1).

Roles of WWF to Protect from Global Warming

WWF-India is one of the largest conservation organizations engaged in wildlife and nature conservation in the country. A part of WWF International, the organization has made its presence felt through a sustained effort not only towards nature and wildlife conservation, but sensitizing people by creating awareness through capacity building and environ-legal activism. A challenging, constructive, science-based organization WWF addresses issues like the survival of species and habitats, climate change and environmental education.

Some Facts and Figures about Global Warming

According to the report of WTO International Organization 2007 the following things are take place in the world and affecting the natural disaster. The biggest ice cap in the arctic region, the ward hunt ice shelf broke into Fragments as a result of global warming, reported NASA. More average shoreline in Fiji receding by half a foot every year. Adelie penguin populations in Antarctica reduce in size by 33%. 20- 30% of the world's reefs wiped out. The above mentioned facts are the tip of the iceberg as far as disastrous effects of global warming.

Effects of Global Warming in India

Elevated carbon dioxide emissions from industries, factories, vehicles etc. have contributed to the greenhouse effect, causing warmer weather that lasted long after the atmospheric shroud of dust and aerosols had cleared [7]. Further climatic changes 20 million years ago, long after India had crashed into the Laurasian landmass, were severe enough to cause the extinction of many endemic Indian forms. The formation of the Himalayas resulted in blockage of frigid Central Asian air, preventing it from reaching India; this made its climate significantly warmer and more tropical in character than it would otherwise have been [9]. Several effects of global warming, including steady sea level rise, increased cyclonic activity, and changes in ambient temperature and precipitation patterns, have affected or are projected to affect India. Ongoing sea level rises have submerged several low-lying islands in the Sundarbans, displacing thousands of people. Temperature rises on the Tibetan Plateau, which are causing Himalayan glaciers to retreat [4]. The present rate of global warming could mean that many plants and animals currently living at lower elevations or at lower latitudes will progressively migrate to higher elevations and latitudes. Hence, in the long term, it may be expected that some of our currently important agricultural species will no longer be able to grow at their present lower latitudinal and lower elevation limits if the global temperate warms.

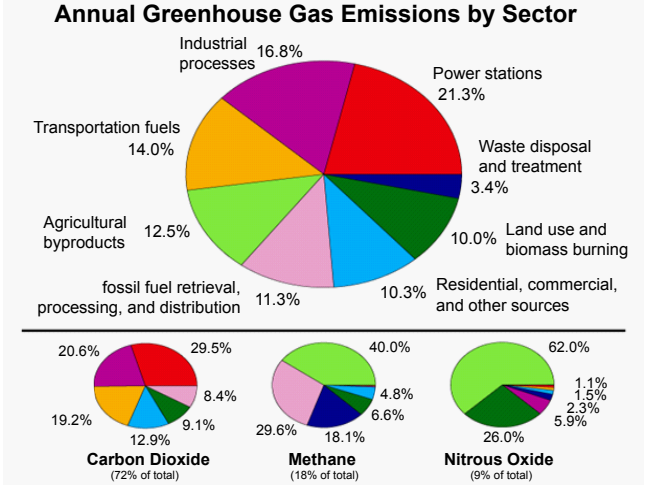

Figure 1: Annual greenhouse gas emission by sector.

Temperature

Evert year rapidly increase the temperature from the global warming and climate change. As the result natural calamities like Tsunami, Soil erosion, Ice glaciers melting in Himalayas and other things.

Discussion

On large scales, the environmental effects specifically attributable to climate change would suggest that reefs as a global biotic phenomenon are not seriously threatened. We know that reefs are structurally and functionally similar over a wide range of conditions and dominant species, indicating that the communities are not highly dependent on specific individual taxa and may be resilient to the loss of some more vulnerable species. When we consider individual climatic factors in isolation, we see that the effects of sea level rise on coral reefs over the next century are more likely to be positive than negative. Increases in maximum sea surface temperatures will increase the frequency of temperature-induced stress or mortality events, but increases in minimum and/or average values may extend the geographic range of conditions suitable for reef development on a longer time scale. Climatic changes in hydrologic or hydrographic factors may have positive or negative effects on a local scale. Although we may expect significant changes in the details of reef characteristics and distributions, there is at present no basis for predicting widespread deleterious effects on average.

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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Southeast England sites: Audley End House and gardens, Dunwich medieval town, Flag Fen Bronze Age wetlands site, Languard Fort 19th century fortification and Sutton Hoo barrow site. Northwest England sites: Beeston Castle ruins and grounds, Birdoss Wald (Hadrian's Wall), Birkenhead Park, Brough Castle ruin, Broughton Castle ruin, Chester Castle medieval tower, Chester Roman Amphitheatre, Furness Abbey ruins, Lanercost Priory ruin, Poltross Burn (Hadrian's Wall), Stott Park Bobbin Mill industrial complex and Walton Old Rectory 13th century complex.

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