

Insight into Natural Resource Management and Ecological Balance

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Abstract

Natural resource management and their planning is very important. This comprises water management, biodiversity conservation and future sustainability of industries like agriculture, mining, tourism fisheries and forestry. When we think about planning of natural resources then question arises in our mind that why we need planning of these resources when these resources are easily available in nature but by proper management of natural resources we can maximize their uses and can save these resources for future generation also. With time one can easily observe that our inhumane nature towards natural resources is exponentially affecting the cycles of nature. Whole cycle is disturbed. Drought, melting of glaciers and sudden calamities and other natural disasters are the result of disturbed cycles of nature. To keep the nature's work going on smoothly we need a state of dynamic equilibrium within a community of organisms in which genetic, species and ecosystem diversity remain relatively stable, subject to gradual changes through natural succession. Measures towards water management, afforestation, recycling of resources and reuse of resources are discussed in this paper. In this paper we tried to focus on various aspect of planning and conservation of these resources and their effective utilization.

Keywords: Sustainability, global warming, ecological balance, natural resource management, ecosystem.

1. Introduction

The way we are moving forward towards future is very destructible for our next generations. At the present moment, there is a perceptible realization that man has built an incompatible living system out

of this world. Imagine, a hot Bangalore, flooded Rajasthan and dry Kerala, green leaves in autumn, very wet summers and warm winters. Stunned Himalayas and a dry Ganges. Climatic changes have threshold the limit of our host planet and gave birth to Global Warming. Basically climate change is referred as Global Warming. Global warming is the current increase in temperature of the Earth's surface (both land and water). Average temperatures around the world has risen by 0.75°C (1.4°F) over the last 100 years about two thirds of this increase has occurred since 1975. In the past, when the Earth experienced increases in temperature it was the result of natural causes but today it is being caused by the accumulation of greenhouse gases in the atmosphere produced by cynical human activities.

1.1 Aims and Objectives

- 1 To study the causes of global warming.
- 2 To analyse the impact of global warming in general and Indian Context.
- 3 To provide suggestions at different levels
- 4 To mitigate the effects of global warming and to control it.
- 5 To study qualitative information for better understanding of Environmental Imbalance and Global Warming.

1.2 What is Global Warming: Air pollution generated environmental problems

Global Warming and the Green House effect refers to Earth's atmosphere, such as carbon dioxide, nitrous oxide, chlorofluorocarbons (CFCs), water vapour and methane, help to trap heat and stop too much of it escaping into space. Without these gases, the earth would not be warm enough for us to live

on. But, the problem is that more and more greenhouse gases are being released into the atmosphere from human activities. And too much heat is being trapped. The earth became 0.74 Degree Celsius warmer during the 20th century, which is already damaging its natural balance and a further rise of even a couple of degrees will be catastrophic for the whole world. As a matter of fact, each country warms the earth more. But in the last century, there has been a phenomenal increase in the earth's surface temperatures caused by emission of man-made greenhouse gases, most like- carbon dioxide, nitrous oxide, chlorofluorocarbons (CFCs) and methane.

1.3 Global Warming and its causes

1 The main reason behind global warming is emission of man-made Greenhouse gases. Industries constitute the majority in emission of these gases.

2 Rapid deforestation has added to the excess heat on earth. Cutting down forests increase the amount of CO₂ in the atmosphere, this can effect climate and destroy the homes of many animals and plants. Moreover, the volume of carbon dioxide entering the atmosphere has increased by 25% in the last century.

3 Depletion of Ozone layer

4 EL Nino- It was worst on records. It effects the atmosphere and global temperature by pumping heat energy into the atmosphere.

2. Discussion

Major reasons for Ecological imbalance and Global Warming are:

1. Change in climate- In recent times, scientists have become concerned that human activities such as burning fossil fuels, are producing greenhouse gases and these are causing global warming. The effects include- ocean currents altering, ice sheets melting, sea levels rising by 3mm a year, more severe weathers- cyclones, floods becoming more common.

2. Global rise in temperatures- The World Meteorological Organization says that the last decade was the warmest known to us.

The IPCC (Intergovernmental Panel on Climate Change) reports that human-induced climate-change, pose a serious threat to natural atmospheric balances because it is definitely contributing to the aggravation of the green-house effect. It is believed that the temperature of the earth will increase by 1.5 Degree Celsius to 4.5 Degree Celsius by the year 2050.

3. Melting of snow/glaciers and rising sea levels- Melting of glaciers will exponentially affect earth's temperature. If all the glaciers melt away, then the cool breeze coming from Atlantic and Pacific Oceans will get so cold that even in summers they would

result into snowfalls in countries where it has never happened yet.

4. Worldwide bleaching and dying of coral reefs- Another indicator of the devastation caused by global warming is the bleaching and dying of coral reefs worldwide. Warming oceans are disrupting the reefs delicate but vital ecosystems. So far, an estimated 27% of world's coral reefs have been either destroyed or damaged by human activity and rest is endangered.

5. Extinction of flora and fauna- Global warming has allowed some species to expand their range, bringing unwelcome competition to other species that previously occupied that area, leading to them extinction or migration.

6. Desertification- Another gloomy truth is of desertification. Vast tracts of land around the world is turning into wasteland because of unsustainable agricultural and industrial activities and deforestation. Several Southern Coastal European countries are experiencing land degradation that borders on permanent desertification.

7. More severe weathers- cyclones, floods becoming more common with higher intensities

2.2 Effects of Global Warming: Context to Indian Subcontinent

1. Receding glaciers- The first and very evident signs of global warming in India are the receding glaciers. The International Commission for Snow and Ice warns that by 2035, most glaciers in India would have melted. Glaciers, including the Gangotri, which feed water to India, Bangladesh and Nepal, are melting. Pindari at the rate of 13m annually and Gangotri by 30m. Further melting would first cause floods and then droughts and lead to water and food shortage

2. Change in monsoon pattern- Another indication of global warming is high variability in rainfall. Monsoon trends between 1991-99 indicate that there have been dramatic shifts in some states. In the last decade, of the 30 meteorological subdivisions, 20 registered excess rainfall. These are serious malfunctioned results. In the future, winter rainfall will decline causing droughts in summers. And for countries like ours, whose economy is totally dependent on the weather any climatic abnormalities will result in decline of economy as well as degradation of human health too.

4. Water famine- The rise in temperature can lead to the melting of snow resulting dying up of snow fed rivers. The depletion of water in one country will have consequences in the other and can lead to its shortage. Falling water tables in Punjab and Haryana are a threat to India's long-term food security.

5. Agriculture- Studies reveal that warmer climates will result in lower rice and wheat yields. Pest

population will increase, negatively affecting agriculture. India, the second largest producer of wheat and fifth largest producer of maize in the world, is obviously suffering a silent kill on its agrarian economy, due to temperature rise.

6. Bio-diversity- Many species of flora and fauna, which cannot adapt to rising temperatures, will become extinct, while others will migrate. Mangroves will get submerged near the coasts and coral reefs will get bleached because of rising sea temperatures.

7. Effect on National Security- Economic Decline: The funds or money needed for the developmental tasks are diverted for the relief measures because of increased floods, cyclones and calamities.

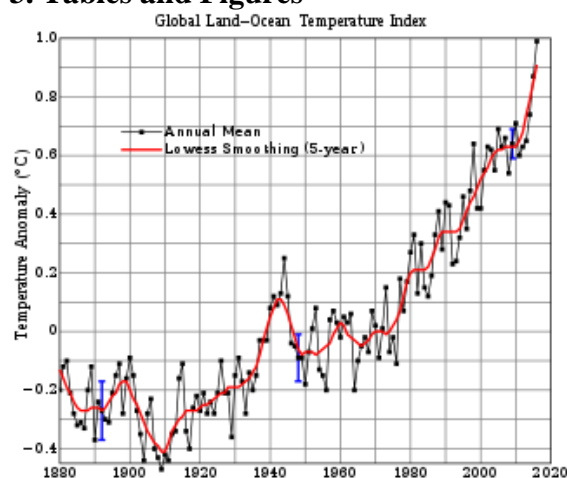
The frequency of severe weather has increased too- in 1960's there were 16 major climate related disasters and in 1990's, there were 70. The average global temperatures are rising rapidly. The 1990's were the warmest in the last 100 years. On the whole, the ecological crisis would result in a change in all aspects of human life. And this change would not be good at all. Now the question arises who shall pay for the cleaning up of the world's polluted environment and repair the damaged earth. Though India does not emit even 5% of greenhouse gases at the moment, it is already paying for the sins of industrialized nations. Developed countries are almost responsible for 80% of world's greenhouse gases, but 90% disasters take place in countries like India.

3. Literature Review:

As per Ash Russell's ¹*Whitakers World of Facts* it gives a clear and predictable insight to the degradation of earth's health. This not only predicts the situation but also give a caution/warning to overcome the problem which we are facing. Whereas Ganesh Narayani² suggests different problems we are going to face and their dedicated solutions. She suggests climate change affects all aspects of individual and social life including health, economics and poverty levels; it is more than a physical phenomenon. It is an environmental, cultural and political phenomenon that is reshaping the way we think about ourselves, our societies and humanity's place on Earth.

T.K. Chitrabhanu³ reveals that understanding to this disastrous problem can only be accomplished by giving proper education about the subject. Some other researchers also worked on natural resource management⁴⁻⁹.

3. Tables and Figures



Graph Source: Wikipedia

Global mean surface-temperature change from 1880 to 2016, relative to the 1951–1980 mean. The black line is the global annual mean, and the red line is the five-year local regression line. The blue uncertainty bars show a 95% confidence interval. Greenhouse effect schematic showing energy flows between space, the atmosphere, and Earth's surface. Energy exchanges are expressed in watts per square metre (W/m^2).

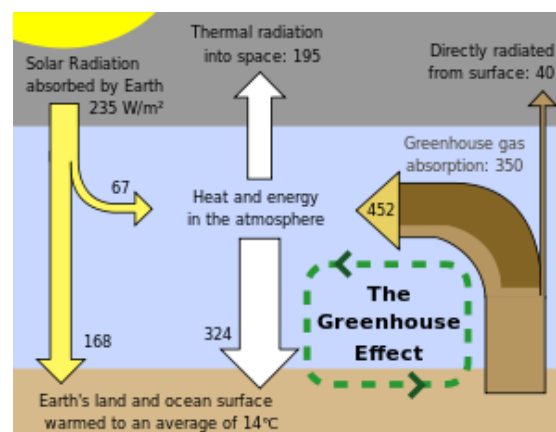


Image Source: Wikipedia

4. Recommendations

At first level

Various Conferences/meetings has been initiated with the purpose of environment protection since 1972, but the seriousness of the issue has not been felt yet. There has to be immediate cut down of greenhouse gases and

CFCs. According to the scientists, even if we stop carbon dioxide emissions now, stabilization will require several 100 years. Basically we have failed to develop common ways to protect our planet, which would have been agreed by the North (developed) and South (developing) both. We need to develop

better models and gain better understanding of both climate change and variability and short-term trends in weather. We would have to soon decide how to prevent the damage to our environment. Clean Development Mechanism and Technology Transfer are some of the answers and we ought to be concerned for it.

1. Today what is actually needed is to invest in the regeneration of natural capital. Economic policy should target the much larger economic returns that would accrue from investments in the expansion of natural capital such as forests, biodiversity, clean air, clean water and healthy soil than from creation of physical assets.
2. The remedy lies in preventing the increase of carbon dioxide, nitrous oxide, chlorofluorocarbons (CFCs), etc. from industrial establishments from tail pipes of the automobiles.
3. To develop on a commercial scale of renewable sources of energy- solar energy, wind energy, geo thermal and tidal. The developed countries can play a major role in controlling the toxic fumes and also in developing renewable sources of energy.
4. Indian Meteorological Department and Climate Change research needs to be strengthened.
5. Weather-information for all programmes, that involves setting up of mini-agro met stations in each block with basic instruments to measure temperature, rainfall, wind speed and relative humidity.
6. Meaningful budgets for RANDD of no carbon emitting technologies.
7. Automobiles industry should take steps to cut down energy consumption and reduce load of GHGs like CO₂, while producing vehicles in order to fall in line with principles of Sustainable Development.

Second level suggestions- Other important areas where utmost attention should be paid are

- 1 Combat poverty
- 2 Change the combustion pattern
- 3 Conservation and management of natural resources
- 4 Combat deforestation and desertification
- 5 Protect the atmosphere from the toxic gases
- 6 Conserve biological diversity and sustainable rural and maintain development

Well to convert these suggestions into reality, there has to be a proper environmental management aiming-

- 1 To analyse the impact of developmental plans on the environment.
- 2 To encourage research in various fields of environment.

Suggestions at individual level

1. Plant as much as tree in our life span. Nourish and nurture it, as it nurtures us. What is needed is to cover one-third of the area under useful plantation in different sectors like agriculture, industry, educational institutions, Government/ Private organizations, residential area, religious centres, etc. We need to plant and protect trees on a war footing. Here, I will focus on the term useful plantation-trees/plants which are eco-friendly must be planted mentioned in our Vedas- in Panchvati and NavgrihaVatika- Peepal, Bargad (Banyantree), Neem, Mango, Jamun, Maulshri, Gular, Ashok, Aonla, Bel must be planted. And very importantly trees like- *Eucalyptus*, Peltafarm, Vilayati Babul (*Prosopis Juliflora*), Amaltash, Gulmohar, Kasoodand Jacaranda etc must not be planted. For example- *Prosopisjuliflora* has posed a serious threat to the flora and fauna of Ghana Bird Sanctuary, which has spread over a 20km area in 28.72km Keoladeo National Park.
2. Awareness towards the motion should be induced to every individual.
3. Taking necessary actions for checking animal trafficking will help environment as animals support in maintaining ecological balance.
4. Using vehicle by pooling will gradually help in improving environment.
5. One single-google search produces 7 grams of carbon dioxide. Search, when it is very important, otherwise avoid it.
6. Save water and electricity.
7. Environmental Studies must be a core subject in schools and colleges.
8. In terms of rules and regulations, we have the most stringent laws on books to protect the environment. But we lack in their strict enforcement. So we must join together and become involved in the political action necessary to strengthen anti-pollution laws, increase the enforcement efforts and protect our bio-diversity.

5. Conclusion

Global warming is the major challenge for our global society. There is very little doubt that global warming will change our climate in the next century. So what are the solutions to global warming? First, there must be an international political solution. Second, funding for developing cheap and clean energy production must be increased, as all economic development is based on increasing energy usage. We must not pin all our hopes on global politics and clean energy technology, so we must prepare for the worst and adapt. If implemented now, a lot of the costs and damage that could be caused by changing climate can be mitigated.

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