

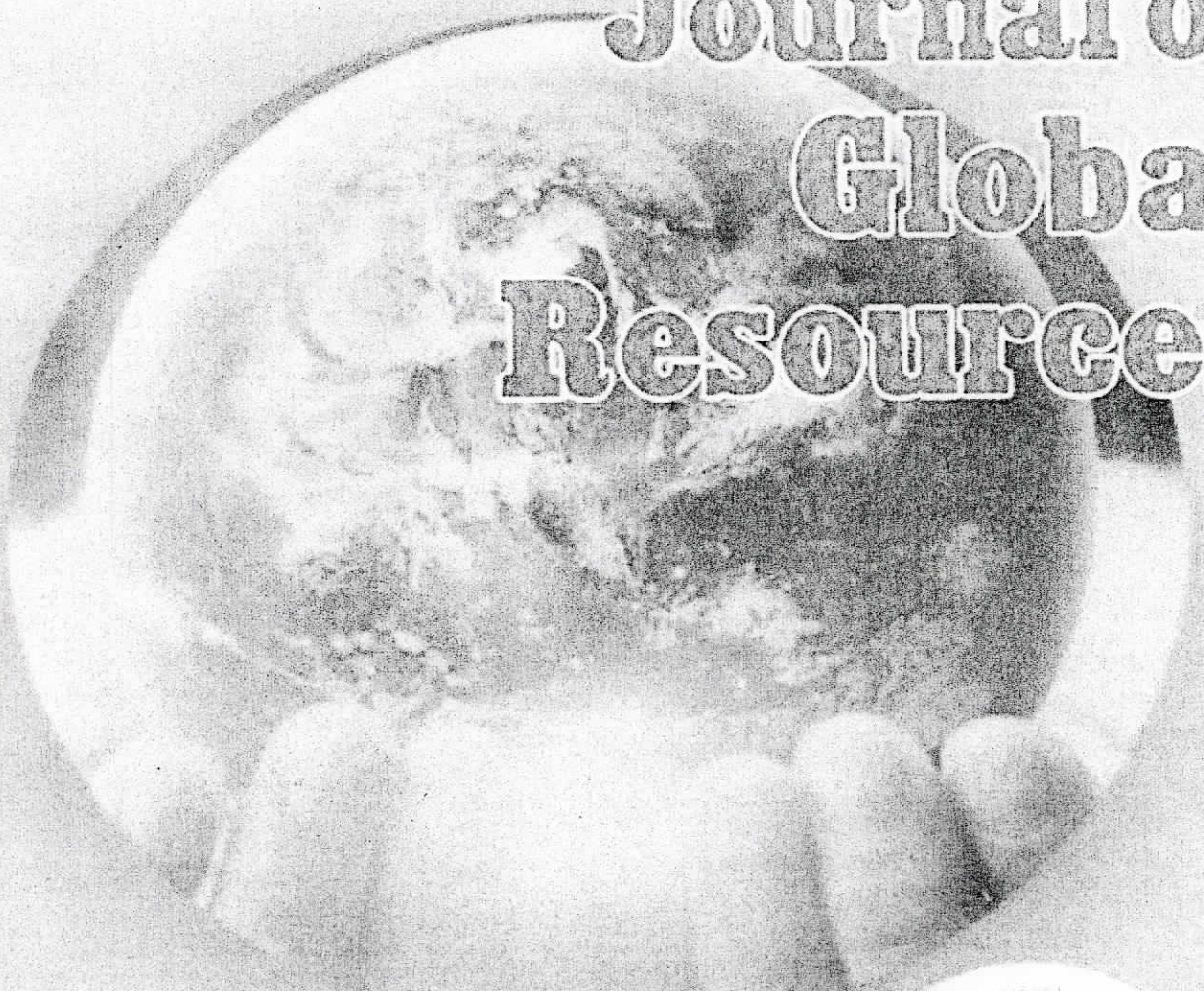
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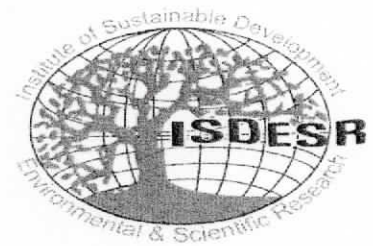
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**IMPACT OF GLOBAL WARMING AND CLIMATE CHANGE ON BIODIVERSITY****Bhaisare S.S.**Loknete Gopinathji Munde ACS College, Mandangad, Ratnagiri, Maharashtra  
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**Abstract:** Continuous increasing the temperature of earth surface is known as global warming. The effects of global warming habitats of the plants are rapidly loss. Due to over use in particular large number of plants and animals are disappearing from their native region over long time. Many medicinal plants and other trees were considered as major endangered plant species. Similarly, various amphibians, fishes, reptiles, birds, corals and mammals, were found as in danger in India. Presently, large number of animal and plant species considered to be wiped out from earth due to climate change and anthropogenic activities. The effect of global warming and climate change on biodiversity will require careful supervision of resources like, water, soil and ecosystem. To manage with impact of global warming on biodiversity including plants, crops, insects, birds and all animals which will affected by scarcity of water and food. All the countries of different continents will need to think and act on how to reduce the increased percentage of GHGs in the universe. They also need to make strong policies about global warming.

**Key words:** Global warming, climate change, biodiversity.

**Introduction**

Continuous increase the temperature of earth surface is known as global warming. The Earth surface temperature is maintained by complex mechanism relating to input of solar radiation and redistribution over the entire surface. Some gases trap the heat radiated by the earth and thus, maintain a constant surface temperature. This mechanism is known as green house effect. The green house effect is a normal process that plays a major part in maintains the earth climate. It produces favorable climatic condition for humans and other living things near the earth's surface. But, due to anthropogenic activities such as industrialization, urbanization, deforestation, Dam and Road construction, agriculture etc. leads to emission of green house gases (GHGs). The GHGs such as carbon dioxide (CO<sub>2</sub>), Methane (CH<sub>4</sub>), Nitrous Oxide (N<sub>2</sub>O), Sulfur dioxide (SO<sub>2</sub>), water Vapor (H<sub>2</sub>O), Chlorofluorocarbon (CFCs), Hydro fluoro carbon (HFCs) and sulfur hexa fluoride (SF<sub>6</sub>) increased the rate of temperature and also affect on climate change. GHGs level increased day by day in the environment due to anthropogenic activities of human being.

**1. Climate Change**

Climate change scenario includes higher temperature, change in rainfall and higher atmospheric CO<sub>2</sub> concentration. The major human influence has been the emission of GHGs such as carbon dioxide, methane, CFCs and nitrous oxide. In future, effects of climate change are predictable on ocean and sea water level, regional changes in rainfall, acidification and increase of deserts in the subtropics. Surface temperature increases are most in the Arctic, with the continuing melting of glaciers, and sea ice. Predicted regional rainfall effects include more normal intense weather events such as heat waves, droughts, wildfires, heavy rainfall with floods, and heavy snowfall (Battisti et.al;2009). Effects of climate directly effect on human health including communicable and non-communicable diseases and agriculture sector, warning to food security from decreasing crop yields, and the neglect of populated areas due to increasing sea water levels.

**2. Biodiversity****2.1 What is Biodiversity?**

Biodiversity is the diverse or variety of organism living on the earth. It can be defined as totality of variety of genes and ecosystem in a region. It is also defined as the sum and interaction of the variation that exist among population, species communities and ecosystem. It maintains a healthy biosphere and provides direct and indirect value to humans. Biodiversity is the multiplicity of life in region that is determined by the number of diverse species in that area. Biodiversity grown up the constancy of an ecosystem and contributes to the health of the biosphere. Among 5- 30 million distinct species on Earth; most are microorganisms and only about 1.75 million have been formally described rich and diverse forms of plant, animal and microbes (Mandal & Ray, 2007).

### 2.2 Importance of biodiversity

Rich and healthy ecosystem is basic need to life. Biological diversity is mainly vital for survival of human being because, it is carefully and essentially incorporated in the ecosystems (Sarkar, 2012). The values of biodiversity are both consumptive as well as non consumptive. The non-consumptive includes: food, medicine, tools for breeding and other domestic needs. The non-consumptive includes ecological processes and tourism. Importance of bio-resources can further be visualized by the information that about 75% of the total items of export from India is directly or indirectly a bio-product (Mishra & Prasad, 2004). More than 35,000 known species of spiders from 80 different families distributed all over the world and about 700 species from 44 different families are reported from India in widely different climatic condition (Singh & Singh, 2004). Aquatic Ecosystems like pond and river, soil, oceans, and coral reefs and forests ecosystem that are in good health provide substantial socio-cultural goods and services as well as economic services at local, national and in many cases, global levels. Effective ecosystems also provide food and fiber, natural medicines and pharmaceuticals. Ecosystems also provide variable services such as water purification, flow regulation, erosion control, storm protection, soil fertility, pollination and carbon appropriation.

### 2.3. Effects on Biodiversity

Global warming and climate change is distressing the habitats of several species of flora and fauna, due to which they must either live or migrate in the area which more favourable for them. Very small changes in average temperature can have a significant effect on ecosystem. Global warming is also considered to be a major possible risk to global biodiversity in the future. For example, coral reefs which are biodiversity hotspots will be lost if global warming continues at the current trend. Glacial bears on the ocean ice of the Arctic sea, close to the North Pole. Climate change has started affecting bear populations. The combined effects of anthropogenic pressure including effect of a changing climate are therefore bound to cause a disaster to the diversity of life nurtured by healthy ecosystems. High utilization of fossil fuels for energy to power development and high rates of deforestation are leading to release very high levels of Carbon dioxide (CO<sub>2</sub>). The present awareness of atmospheric CO<sub>2</sub> is already at an ecological threshold and this need extreme actions to be taken immediately (IPCC 4 2007). Global warming is outcome of augmentation of atmosphere greenhouse gases compounds (Ranade, 2009). Climate change effects on environment such as, glacial melt at pole which rising sea level. This effect on biodiversity at the species level, in term of phenology, distribution and populations, and ecosystem level mostly occurs on plants and animals. In plants, earlier leaf production and maturation which affects photosynthesis. While in animals, changed timing of egg laying and hatching, change in migration patterns of birds and fish, reptiles and other animals. Due to global warming reduction and redistribution of algae and phytoplankton and zooplankton, this threatens the existence of fish and other aquatic animals that depends on algae and planktons. Global warming is already disrupting the biological world; push up many species to the threshold of extinction and turning others into runaway pests. Recent finding suggests that good climates are very likely to result in formation of new community, new associations among species, and promote interactions that have not existed in the past. Climate change determines which species will survive, and which will decline and possibly go extinct in response to climate change. The strength for biodiversity to respond to climate change over short and long time scales is enhanced by increased genetic diversity. According to climate change, species give response to environment. Due to climate

change, habitat rapidly and due to over exploitation in particular large number of plants and animal disappear from their native region in excess of long time. Many medicinal plants, other trees were considered as major endangered plant species. Similarly, large number of mammals, birds, reptiles, fishes and corals were found as threatened in India. Presently, a good number of plants and animals species considered to be vanished from earth due to climate change and anthropogenic activities. The approximate numbers of extinct species of major categories are given in Table 1.

**Table 01: Approximate number of extinct plants and animals species.**

| Plants species | Numbers | Animal species | Numbers |
|----------------|---------|----------------|---------|
| Fern allies    | 04      | molluschs      | 202     |
| True Ferns     | 12      | crustaceans    | 04      |
| Gymnosperms    | 02      | Insect         | 61      |
| Angiosperms    |         | Fishes         | 33      |
| Dicot          | 458     | Ambhibians     | 02      |
| Monocot        | 120     | Reptiles       | 23      |
|                |         | Birds          | 117     |
| Total          | 596     | mammals        | 62      |
|                |         | Total          | 504     |

More than the years of investigation made by Botanical Survey of India and Zoological Survey of India indicate the fact that many Indian species of plants and animals are said to be endangered in their habitats. An expected number is shown in the Table 02.

**Table 02: Status of threatened plants and vertebrate species in India**

| Plants/animal species | Estimated number |
|-----------------------|------------------|
| Flowering plants      | 1,336            |
| Mammals               | 39               |
| Birds                 | 72               |
| Reptiles              | 17               |
| Amphibians            | 03               |
| Fish                  | 02               |

#### 4. Solution for minimizes the level of GHGs in the environment

##### 1. Reduce, Reuse, Recycle (3R system)

By using the products with nominal covering will help to reduce waste. By recycling half of our domestic waste, we can save 2,400 pounds of carbon dioxide annually.

##### 2. Substitute ordinary Light Bulbs

Where it is possible, replace regular light bulbs with CFLs bulbs. Replacing just one 60 watt luminous light bulb with a CFL /Lead will save two-thirds less energy, and give off 70 percent less heat.

##### 3. Use less Heat and Air Conditioning

Adding insulation to walls and installing weather stripping or caulking around doors and windows can lower heating costs more than 24 percent, by reducing the amount of energy you need to heat and cool home. Turn down the heater during sleeping at night and keep temperatures moderate at all times. Set up a programmable thermostat, because setting it just 2°C less in winter and maximum in summer might save nearly 2,000 pounds of carbon dioxide annually.

##### 4. Buy Energy-Efficient Products

Home appliances like refrigerators, heaters, Air conditions, Micro oven etc. Now coming in a range of energy-efficient models, and condensed florescent bulbs are planned to provide more natural-looking light while using far fewer energy than average light bulbs.

**5. Drive Less and Drive Smart**

Minimum driving gives fewer emissions. Moreover reduction gasoline, walking and biking are huge forms of do exercises. During drive, make sure the car is running efficiently. For example, keeping our tires properly inflated can improve your gas mileage by more than 3 percent. Every gallon of gas we save not only helps your budget; it also keeps 20 pounds of carbon dioxide out of the atmosphere.

**6. Use less Hot Water**

Adjust the water heater at 120 °C to save energy, and wrap it in an insulating blanket if it is more than 15 years old. Procure low-force showerheads to keep hot water and around 350 pounds of carbon dioxide annually. Clean the clothes in hot or cold water to diminish utilize of hot water and the energy required producing it. That change alone can save at least 500 pounds of carbon dioxide yearly in most domestic.

**7. Plantation of a Trees**

Cultivation of plant a tree, start digging. Trees absorb carbon dioxide and give off oxygen. One tree will take up around one ton of carbon dioxide during its life span. So, forestation will help to reduced excess carbon dioxide from the environment.

**B. Motivate Others to Conserve**

Share information about recycling and energy conservation with your friends, neighbors and co-workers, and take opportunities to encourage public officials to establish programs and policies that are good for the environment. Above these valuable steps will be help in reducing our energy use and saving our money. Less energy use means less dependence on the fossil fuels that create greenhouse gases and contribute to global warming.

**Conclusion**

Biodiversity is very valuable for human being. Global warming is directly affecting the existing biodiversity present on the earth. Ecosystem is very sensitive to climate change. More than the past 100 of years, the global typical temperature has increased approximately 0.68°C due to global warming. The effect of global warming on biodiversity will require careful management of resources like water soil, and ecosystem. To manage with effect of global warming on biodiversity including plants, crops, insects, birds and all animals which will affected by scarcity of water and food. All the countries of different continents will need to think and act on how to reduce the increased percentage of GHGs in the universe. They also need to make strong policies about global warming.

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