



## CLIMATE CHANGE AND BIODIVERSITY

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### **ABSTRACT:**

Healthy ecosystems and rich biodiversity are fundamental to life on our planet. Climate change is affecting the habitats of several species, which must either adapt or migrate to areas with more favorable conditions. Even small changes in average temperatures can have a significant effect upon ecosystems. Climate change describes a change in the average conditions such as temperature and rainfall in a region over a long period of time. Climate change is the long-term alteration of temperature and typical weather patterns in a place. Climate change could refer to a particular location or the planet as a whole. Our planet is warming faster than at any time in the past 10,000 years. With these changes, species have to adapt to new climate patterns. Global warming resulting from human emissions of greenhouse gases. A huge number of biodiversity are loss due to the climate change.

### **Keywords:**

*Climate change, Biodiversity, Ecosystem, Temperature, Global Warming, Species, Planet, Long period of time, Greenhouse gases.*

### **INTRODUCTION:**

The link between climate change and biodiversity has long been established. Although throughout Earth's history the climate has always changed with ecosystems and species coming and going, rapid climate change affects ecosystems and species ability to adapt and so biodiversity loss increases. The main problem of climate change is: increased heat, drought and insect outbreaks, all linked to climate change, have increased wildfires. Declining water supplies, reduced agricultural yields, health impacts in cities due to heat, and flooding and erosion in coastal areas are additional concerns.

## **CONCEPT OF CLIMATE CHANGE AND BIODIVERSITY:**

Climate change is a long-term shift in the average weather conditions of a region, such as its typical temperature, rainfall, and windiness. Climate change means that the range of conditions expected in many regions will change over the coming decades. This means that there will also be changes in extreme conditions. The climate varies naturally from year to year and decade to decade. This is caused by natural processes linking the atmosphere, ocean and land, as well as variations in heat output from the sun. In addition to changes in climate that are caused by natural climate variability, climate change can be caused by human activity. The kind of climate change we are experiencing now is being caused primarily by these human factors.

Biodiversity is the variability among living organisms from all sources, including terrestrial, marine, and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species, and of ecosystems.

## **RELATION BETWEEN CLIMATE CHANGE AND BIODIVERSITY:**

It is now widely recognized that climate change and biodiversity are interconnected. Biodiversity is affected by climate change, with negative consequences for human well-being, but biodiversity, through the ecosystem services it supports, also makes an important contribution to both climate-change mitigation and adaptation. Consequently, conserving and sustainably managing biodiversity is critical to addressing climate change.

There is ample evidence that climate change affects biodiversity. According to the Millennium Ecosystem Assessment, climate change is likely to become one of the most significant drivers of biodiversity loss by the end of the century. Climate change is already forcing biodiversity to adapt either through shifting habitat, changing life cycles, or the development of new physical traits.

Conserving natural terrestrial, freshwater and marine ecosystems and restoring degraded ecosystems (including their genetic and species diversity) is essential for the overall goals of both the Convention on Biological Diversity and the United Nations Framework Convention on Climate Change because ecosystems play a key role in the global carbon cycle and in adapting to climate change, while also providing a wide range of ecosystem services that are essential for human well-being and the achievement of the Millennium Development Goals.

Biodiversity can support efforts to reduce the negative effects of climate change. Conserved or restored habitats can remove carbon dioxide from the atmosphere, thus helping to address climate change by storing carbon (for example, reducing emissions from deforestation and forest degradation). Moreover, conserving in-tact ecosystems, such as mangroves, for example, can help reduce the disastrous impacts of climate change such as flooding and storm surges.

## **EFFECTS OF CLIMATE CHANGE ON BIODIVERSITY :**

The IPCC 4 Assessment Report (AR4) concluded that climate change will have significant impacts on many aspects of biological diversity. These impacts will include effects on ecosystems, on their component species and genetic diversity within species, and on ecological interactions. The implications of these impacts are significant for the long-term stability of the natural world and for the many benefits and services that humans derive from it. Because of the importance of these impacts and of climate change itself, there has been a great deal of recent research, which has added to the evidence base.

Healthy ecosystem and rich biodiversity are fundamental to life on our planet. Climate plays a very vital role on environment and human life. By the effect of climate change the economic balance are also maintained. Due to the monsoon rainfall the agricultural procedure are fulfil, where aa its' known very well that the agriculture re the economic backbone of India.

With all this, its' very clear that the climate leave a huge effect on the biodiversity. A huge number of biodiversity are lost its' existence due to the effect of climate change. Suddenly the increasement of the global average temperature have create a environmental issue of ice-cover region, the ice are melting and the water level are also increase with the same equinity.

The change of climate leave its' impact in many section of different biodiversity. Such as:

- ❖ A number of species will be affected physiologically by climate change. There is evidence that some species are physiologically vulnerable to temperature spikes. For example, the green ringtail possum, an endemic species of Queensland's tropical rainforests, cannot control its body temperature when the ambient temperature rises above 30°C. An extended heatwave in north Queensland could kill off a large part of its population.
- ❖ Predicted changes in the intensity, frequency and extent of disturbances such as fire, cyclone, drought and flood will place existing vegetation under stress and favour species able to rapidly colonies denuded areas. In many cases this will mean the spread of alien 'weed' species and major changes in the distribution and abundance of many indigenous species. Heatwaves may affect the biodiversity of marine ecosystems, as seen in the summer of 2010–11 in south western West Australia. Extended periods of warmer sea temperatures resulted in the shut-down of the abalone industry, and the migration of whale sharks and manta rays further south and east than usual.
- ❖ The basic ingredients for photosynthesis include carbon dioxide and water. Increased carbon dioxide in the atmosphere causes increased growth rates in many plant species. This is good news for farmers, but only if this carbon dioxide 'fertilization' effect is matched by adequate soil moisture and other nutrients. Leaf-eating animals like koalas may not be so lucky: increased concentrations of carbon dioxide could diminish the nutritional value of foliage. A lot of CO<sub>2</sub> that has been emitted into the atmosphere has been absorbed by the oceans. This has resulted in a decrease in the ocean's pH, which in turn affects the rate at which many marine organisms build

skeletons, meaning that reefs damaged by bleaching or other agents would recover more slowly.

- ❖ According to the most recent IPCC report, sea level is predicted to rise by 26–98 centimeters by 2100, due to the thermal expansion of the oceans and the melting of polar ice-caps and ice sheets. Coupled with the effects of storm surges, which are expected to be of a greater magnitude in a warmer world, this increase in sea level could threaten many coastal ecosystems. Also at risk are mangrove forests and low-lying freshwater wetlands in Kakadu national park.

## **CONTROL FACTORS:**

### **1. Power your home with renewable energy:**

Choose a utility company that generates at least half its power from wind or solar and has been certified by Green-e Energy, an organization that vets renewable energy options. If that isn't possible for you, take a look at your electric bill; many utilities now list other ways to support renewable sources on their monthly statements and websites.

### **2. Weatherize, weatherize, weatherize:**

“Building heating and cooling are among the biggest uses of energy,” Haq says. Indeed, heating and air-conditioning account for almost half of home energy use. You can make your space more energy efficient by sealing drafts and ensuring it's adequately insulated. You can also claim federal tax credits for many energy-efficiency home improvements.

### **3. Invest in energy-efficient appliances:**

Since they were first implemented nationally in 1987, efficiency standards for dozens of appliances and products have kept 2.3 billion tons of carbon dioxide out of the air. That's about the same amount as the annual carbon pollution coughed up by nearly 440 million cars. “Energy efficiency is the lowest-cost way to reduce emissions,” Haq says; When shopping for refrigerators, washing machines, and other appliances, look for the Energy Star label. It will tell you which are the most efficient.

### **4. Reduce water waste:**

Saving water reduces carbon pollution, too. That's because it takes a lot of energy to pump, heat, and treat your water. So take shorter showers, turn off the tap while brushing your teeth, and switch to Water Sense-labeled fixtures and appliances. The EPA estimates that if just one out of every 100 American homes were retrofitted with water-efficient fixtures, about 100 million kilowatt-hours of electricity per year would be saved avoiding 80,000 tons of global warming pollution.

### **5. Rethink planes, trains, and automobiles:**

Choosing to live in walkable smart-growth cities and towns with quality public transportation leads to less driving, less money spent on fuel, and less pollution in the air. Less frequent flying can make a big difference, too. “Air transport is a major source of climate pollution,” Haq says. “If you can take a train instead, do that.”

## **6. Shrink your carbon profile:**

You can offset the carbon you produce by purchasing carbon offsets, which represent clean power that you can add to the nation's energy grid in place of power from fossil fuels. But not all carbon offset companies are alike. Do your homework to find the best supplier

## **CONCLUSION:**

To reduce the negative impact of climate change on biodiversity we recommend: Encouraging a move away from static targets for biodiversity conservation. Ensuring climate change adaptation activities are integrated across as many sectors/ministries as possible, whilst avoiding conflicting targets.

## **Reference:**

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