Climate Change and its Consequences

Global warming has been the single most significant climatic change caused by human activities on Earth. Even though the greenhouse effect is critical to life on Earth, human-made emissions such as carbon dioxide, methane, nitrous oxide, and chlorofluorocarbons have increased the entrapment of the sun's energy in the atmosphere, leading to global warming. Once thought to be the cause of global warming and climatic changes, Al‐Ghussain (p. 13) reported that solar irradiance is not responsible for increased global temperatures. Human activities such as tree-clearing and deforestation, burning of fossil fuels, and agricultural and farming practices have been shown to bear the heaviest responsibility in the ongoing global warming and climatic changes. This paper argues that human activities have disturbed the balance in the ecosystem and created climatic changes that have adverse consequences on ecology and life on the planet.

Life in Arctic ice and permafrost regions and around global water bodies has been adversely affected by global warming. The average global temperature has risen by 0.14° Fahrenheit per decade since 1880, and the rate has increased to 0.32° F since 1981 (Nadeau et al., p.1087; Tanentzap et al., p. 6853). If no intervention is taken into account, the Earth will be 2-9.7°F warmer by the year 2100, as postulated by Czernecki and Ptak (n.p). Consequently, the polar ice caps in the Arctic Sea are melting at a rate of 13% per decade (Yadav, Kumar, & Mohan, p. 2617). Yadav, Kumar, and Mohan (p. 2618) added that within the past three decades alone, the thickest and oldest ice in the Arctic has declined by about 95%. The researchers further projected that in case emissions and global warming remain unchecked, Arctic ice may be depleted by the year 2040, leading to further myriad of consequences.

Floods, hunger, rising levels of global water bodies and displacement of coastal populations, and endangered wildlife are some of the present consequences of climatic changes as a result of global warming. Ice has melted and increased water levels in seas and oceans,

increasing precipitation in some parts of the world, which leads to floods. Increased water levels in oceans, seas, and lakes result in the displacement of populations and the destruction of infrastructure of large economic values around water bodies. A cascade of events such as disease eruptions, socioeconomic challenges of the displaced, and political as well as civil unrest may ensue.

The consequences of climatic changes are evident in all levels of ecological organization. There are widespread population and life-history changes, changes in species composition of communities, shifts in geographic range, and changes in functioning and the structure of ecosystems. Freeman et al. (p. 1268) attributed the recent population decline of different plant and animal species and both global and local extinctions to these ecological effects. With less sea ice, animals that depend on it as a habitat either adapt or perish. The melting of permafrost and ice has endangered the survival of polar bears, arctic foxes, reindeer, snowy owls, and walruses, among other species. As the mentioned species are affected by climate change, so are other species that depend on them as well as human beings. Wildlife and people interact more as wildlife encroach on Arctic communities in search of refuge as their habitats disappear, causing serious wildlife-human conflicts.

From this discussion, temperature and precipitation are important climatic aspects that immensely affect the abundance, distribution, physiology, and behavior of animal and plant populations and communities, thereby affecting ecology. The natural ecosystem remains the most precious resource, essential for sustaining life. Human beings have disproportionately benefitted from natural ecosystems in comparison to animals and plants, but in the process of exploiting the environment for their benefit, they created climatic imbalances that have far-reaching implications on climatic conditions and affect all forms of life and living order on Earth.

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