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Modern civilization is largely responsible for Global Warming

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Abstract

The Earth was formed approximately 4.54 billion years ago, and at that time, it was free from pollution. Scientists estimate that humans appeared about three hundred thousand years ago, and since then, humans have extracted resources from nature to build settlements, agricultural fields, mining areas, industries, and urban centres. In the modern world, with the advancement of mechanical civilization, various toxic gases are being produced due to reckless human activities. These gases are forming a blanket-like layer over the Earth, which allows short-wave solar radiation to penetrate to the surface, but when this radiation is reflected back as long waves, it is trapped by this layer. As a result, the Earth's temperature is gradually increasing is called global warming, which is slowly leading humanity and the planet towards destruction. Due to this global warming, the Earth's average temperature will increase by 5.8 degrees Celsius, glaciers will melt, sea levels will rise by 15 to 95 centimetres (by 2050), the frequency of natural disasters will increase, agricultural production will decrease, approximately 17 percent of Bangladesh's land will be submerged under seawater, and in India, 5,763 square kilometres of coastal area will be submerged, creating a new problem of environmental refugees. Major floods and droughts will occur, and cities like Kolkata, Mumbai, Chennai, the Maldives, the Sundarbans, and London will be submerged. The sources of the Ganges, Brahmaputra, and Indus rivers will dry up, groundwater levels will drop. For every one-degree Celsius increase in temperature, rice and wheat production will decrease by 10%, India's GDP will decrease by 5%, the incidence of epidemics and diseases will increase, and by 2075, the Earth's biodiversity will be lost. So, this is the best time to learn from past mistakes and make the right for happier life and for the future generations.

Keywords: nature, pollution, modern civilization, temperature, biodiversity, public participation

1. Introduction:

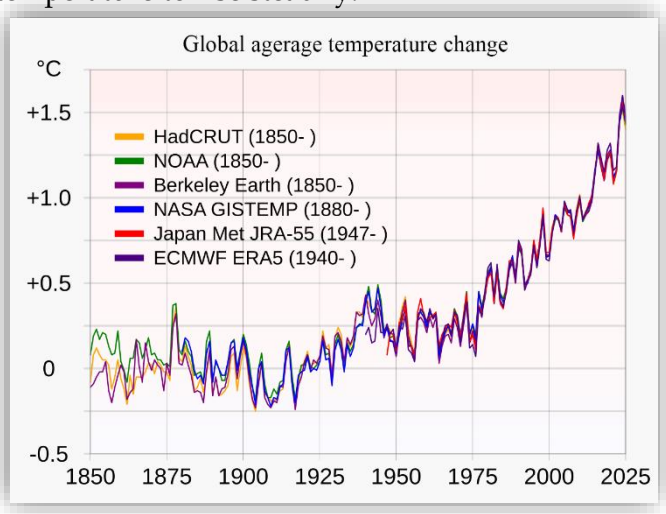
Now a days global warming is the most important topic of discussion in the contemporary society. Plants and animals on Earth are accustomed to living at a certain temperature. The life cycle of organisms and their surroundings are carried out at temperatures within the tolerance range. If the terrible situation like global warming that is happening without the attention of modern civilization is not brought under control immediately, the destruction of organisms is inevitable. In addition to saving ourselves, an attempt has been made in this paper to leave a beautiful and healthy world.

2. Mean By Global Warming:

The average temperature of the Earth has been increasing over the past few centuries. The average atmospheric temperature increased by 0.5 degrees Celsius between 1850 and 1900, and by 1 degree Celsius between 1900 and 2000. Therefore, there is no doubt that the natural environment is gradually becoming warmer. Scientists have named this increasing warming trend across the Earth as global warming. This paper attempt to discuss, explore and draw attention to the society.

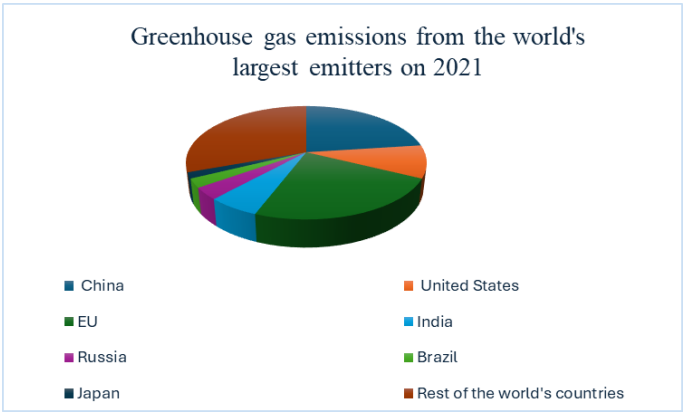
3. Causes of Global Warming:

The main reason for the continuous increase in the Earth's temperature is that the levels of greenhouse gases are increasing, which is intensifying the greenhouse effect. As a result, the Earth's average temperature is rising, leading to global warming The burning of fossil fuels, deforestation, smoke from factories and vehicles, industrialization, urbanization, decaying organic waste, and CFC gases are mainly responsible for global warming. Due to the heat-retaining capacity of various greenhouse gases such as carbon dioxide, methane, nitrous oxide, and chlorofluorocarbons, their increasing concentration in the atmosphere is causing the Earth's average temperature to rise steadily.



Source: Wikipedia

I. **Industrialization:** Since the Industrial Revolution, the amount of fossil fuel combustion has increased rapidly. These Industry are releasing a vast amount of greenhouse gases into the atmosphere. According to data in 1850, 3 billion tons of carbon dioxide were produced by burning coal and oil, while in 2000, we produced seven billion tons of carbon dioxide just by burning coal. Since the Industrial Revolution, i.e., after 1850, the density of carbon dioxide in the atmosphere has been steadily increasing, and as a result, the Earth's temperature has risen by 0.74 degrees Celsius (Maity, 2012). In the history of the last 1000 years, the last 50 years have been the warmest. A 1999 statistic shows that developed industrial countries are responsible for 50 percent of the total carbon dioxide emissions into the atmosphere.



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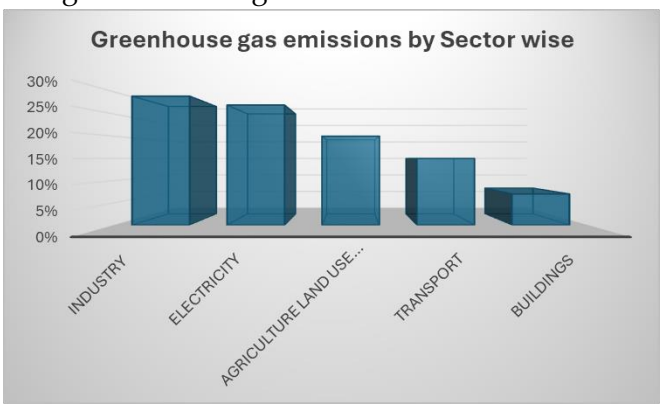
II. **Excessive Use of Fossil Fuels:** The indiscriminate and excessive use of fossil fuels (petroleum, coal, natural gas) is releasing large amounts of carbon dioxide into the atmosphere. It increased by approximately 31 percent between 1860 and 2005 (from 290 to 365 ppm). If fossil fuels continue to be used at this rate, the amount of carbon dioxide will double between 2030 and 2050.According to statistics, nine billion tons of carbon dioxide are being released into the atmosphere every year. The combustion of fossil fuels also produces methane and nitrous oxide gases. One kilogram of methane gas produces the same amount of heat as 25 kilograms of carbon dioxide.

III. **Urbanization:** Vast amounts of forest land are being destroyed by urbanization. On the other hand, it produced Toxic methane gas from urban waste. Vehicles, cooking, and other activities of public also produce carbon dioxide, methane, nitrous oxide, and chlorofluorocarbons.

IV. **Vehicle Exhaust:** Vehicle exhaust is particularly responsible for global warming. This exhaust contains toxic greenhouse gases. Airplanes produce large amounts of carbon dioxide in their exhaust. Vehicle exhaust and industrial emissions also create smog, which contributes to global warming.



Data Source: Internet

V. **Deforestation:** Deforestation is a vital causing of increase the levels of greenhouse gases. Plants can absorb carbon dioxide. Approximately 20 million hectares of forest are being destroyed every year. Each year, one tree can absorb 12 kg of carbon dioxide and provide oxygen for four people. In the last 50 years, twenty percent of the Amazon rainforest has been destroyed. If deforestation continues at this rate, the amount of carbon dioxide in the atmosphere will increase significantly.

VI. **Organic Waste:** Organic waste, such as decaying city waste, agricultural waste, and the remains of dead plants and animals, produces toxic methane gas, which contributes to warming the atmosphere. Methane accounts for approximately 18% of the increase in the Earth's average temperature.

VII. **Nuclear Explosions:** Nuclear explosions produce gases such as carbon dioxide, carbon, methane, nitrous oxide, chlorofluorocarbons, sulphur dioxide, and chlorine, which mix with the atmosphere. These greenhouse gases contribute to global warming.

VIII. **Volcanic Eruptions:** Volcanic eruptions are a natural phenomenon. During volcanic eruptions, various toxic gases such as sulphur dioxide, nitrous oxide, nitrogen, carbon, carbon dioxide, chlorine, and water vapour are released into the atmosphere. These gases contribute to increasing the temperature of the atmosphere. Furthermore, the lava flow on the Earth's surface during eruptions also increases the Earth's temperature.

IX. **Fertilizers and Pesticides Used in Agriculture:** Various types of inorganic fertilizers and pesticides such as DDT, DDPV, HCH, DBCP, PAN, and 10CV are used in agriculture. Additionally, methane, nitrous oxide, and nitrogen are produced from sulphur dioxide and various fertilizers used in agricultural processes. Moreover, agricultural waste releases the largest amount of methane gas, which significantly contributes to global warming.

4. Effects Due to Global Warming: As the Earth heats up, the natural environment and human existence will be endangered. Not only that, glaciers will melt, the sources of many rivers will dry up, sea levels will rise, island nations will be permanently submerged, and new problems will arise, such as environmental refugees. Problems with drinking water will increase, and there will be massive floods, epidemics, and various natural disasters.

I. **Melting of Glaciers:** If greenhouse gases continue to be emitted in this way, the world will warm rapidly, and glaciers will melt. Due to global warming, the number of glaciers in Montana's Glacier National Park, which had approximately 150 glaciers in 1910, has now decreased to less than 30. Since 1912, about 80 percent of the ice on Mount Kilimanjaro in Tanzania has melted. Due to global warming, large glaciers are shrinking by 10 to 15 meters per year. Even the Gangotri glacier is shrinking by about 23 meters every year (Shah, 2017).

II. **Sea Level Rise:** Due to the rise in sea level caused by melting glaciers, island nations are being submerged. The sea level is rising by about 2 millimetres every year. By 2070, the sea level will rise by about 50 centimetres, which will submerge the Sundarbans, Bakkhali, Digha, Mandarmani, and many other islands.

III. **Submergence of Island, Nations:** If the Earth's temperature continues to rise in this way, glaciers will melt, and that water will mix with the seawater, causing the sea level to rise, and as a result, coastal areas and island nations will be submerged underwater. By 2030, approximately 17% of Bangladesh's landmass will be submerged, and about 8% of India's land will be submerged. Island nations like the Maldives and Sri Lanka will be submerged. Along with them, cities like Kolkata, Mumbai, Boston, London, and Chennai will also be submerged.

IV. **Environmental Refugees:** When coastal areas and island nations are submerged, a large number of people will become displaced. By 2050, approximately ten million people in India will become environmental refugees, and a large number of people in Bangladesh will have to relocate.

V. **Extinction of Species:** Due to the increase in the Earth's temperature, many species of animals and plants will become extinct from the planet. Due to the increase in the Earth's average temperature, many mammals, butterflies, and birds will become extinct from the Earth. Like the dinosaurs, polar bears and penguins will one day become extinct from the Earth.

VI. **Climate Change:** As the Earth's temperature rises, the Earth's climate will change. Changes will be observed in air currents and pressure zones, plus excessive rainfall, droughts, storms, heat waves, and cold waves will be observed. Climate change is causing rapid changes in the biological and physical environment. The amount of humidity in the air will increase, the height of the clouds will increase, and the summer heat will become more intense.

VII. **Impact on Agriculture:** Global warming is affecting agriculture and disrupting food production. Due to the decrease in rice and wheat production caused by rising temperatures, severe food shortages will occur in third-world countries. The reduction in production will lead to a decrease in India's GDP.

VIII. **Other Impacts:**

- Global warming will reduce soil fertility, which will disrupt agriculture.
- The intensity of El Niño and La Niña, which originate off the coasts of Peru and Chile, will increase, resulting in floods, droughts, and various natural disasters on Earth.
- The increase in temperature will cause changes in the water cycle between the atmosphere, hydrosphere, and lithosphere, which will affect the biosphere and the environment.
- Due to the increase in the Earth's temperature, the expansion of deserts will occur rapidly, causing harm to many people.

5. Sustainable Solutions to Solve Global Warming:

- The use of fossil fuels (such as coal, petroleum, and natural gas) must be reduced to minimize the amount of carbon dioxide in the atmosphere as much as possible. More importance must be given to clean technology.
- More attention should be placed on the use of unconventional energy sources such as solar energy, wind energy, tidal energy, geothermal energy, and hydroelectric power.

- Special attention must be paid to preventing deforestation and planting trees. Trees absorb carbon dioxide and produce oxygen, maintaining the balance of the environment. Vehicle emissions produce various types of greenhouse gases that contribute to global warming; therefore, the efficiency of vehicle engines must be improved. Emphasis should be placed on "no driving days," using bicycles for short distances, and utilizing battery-powered vehicles.
- Industrial pollution must be controlled using various advanced technologies.
- The use of various pesticides and chemical fertilizers in agriculture must be reduced.
- Environmental education should be emphasized in schools, colleges, and other educational institutions. Seminars on various aspects of the environment should be organized at national and international levels.
- The policies adopted in Montreal, Canada in 1987 must be followed, such as reducing the use of chlorofluorocarbon gases, controlling greenhouse gases, and protecting the Earth from ozone depletion.
- The 'Agenda 21' program adopted at the Earth Summit held in Rio de Janeiro, Brazil in 1992 must be followed. This program states that the use of fossil fuels on Earth must be reduced compared to current levels, and deforestation must be prevented.

6. Most Effective Ways to Mitigate Global Warming On A Small Scale:

a. Changes in Transportation Systems:

- Reduce Carbon Emissions, to lower carbon dioxide emissions, prioritize walking or cycling instead of using cars.
- Carpooling: Share rides to reduce the number of vehicles on the road and decrease carbon dioxide generation.
- Electric Vehicles: Emphasize the use of electric vehicles to reduce the consumption and production of fossil fuels.
- Reduce Air Travel: Airplanes consume vast amounts of fuel; therefore, whenever possible, opt for alternative modes of transport—such as trains—instead of flying.

b. Curbing Household Energy Consumption:

- Use Renewable Energy, Prioritize the use of solar energy in homes to reduce carbon dioxide emissions.
- Use energy efficient devices: Replace appliances with Energy Star-rated models and switch to LED lighting, which consumes 75 % to 80 % less electricity.
- Combat "Vampire Power": To minimize unnecessary energy waste, ensure that switches are turned off when are not at home.

c. Dietary Changes:

- Adopt a Plant-Rich Diet: Consume plant-based foods and reduce the intake of dairy products and meat, as livestock farming requires extensive agricultural land and is a significant contributor to greenhouse gas emissions.
- Reduce Food Waste: Minimize food wastage. Compost food scraps to prevent methane emissions.
- Shop Sustainably: Reduce and Reuse: Buy fewer new items; instead, repair and reuse existing belongings.
- Avoid Excessive Packaging: Refrain from purchasing products with unnecessary or excessive packaging.
- Choose Biodegradable Packaging: Opt for products with biodegradable packaging materials.

d. Tree Plantation:

- Encourage friends, family, colleagues, and students to reduce their own carbon footprints.
- Raise public awareness regarding these issues.
- Above all, emphasis should be placed on planting trees.

7. Conclusion: Scientists and environmentalists agree that the entire human community is largely responsible for the devastating consequences of global warming that are occurring in nature and those that are yet to come. The bitter effects of global warming will not only harm humans, but will also affect the entire animal and plant kingdoms. Due to rising temperatures, the polar ice caps will melt, causing sea levels to rise, which will submerge coastal cities. Agriculture and fisheries will also be affected. Therefore, we must be vigilant immediately. First and foremost, everyone must take corrective measures such as stopping deforestation and undertaking afforestation, and prioritizing renewable energy sources over conventional ones, can show the way to a solution, and environmentally friendly innovative thinking can provide a lasting solution. Carbon dioxide is the main cause of global warming, and its concentration in the atmosphere is increasing rapidly from various sources. Its production must be reduced through legislation, and the Montreal Protocol and Agenda 21 program adopted at the Earth Summit must be followed. Most importantly, various awareness programs must be undertaken to educate the public, because a lasting solution is only possible through public participation.

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