

Global warming: Main causes

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According to NASA, "Human activity — not the sun — is the main driver of global warming." The Industrial Revolution in the mid-1700s and the agriculture revolution in the 19th and early 20th centuries contributed tremendously towards the social, economic, scientific, political and cultural development in the world. In contrast, due to these revolutions, the intensity and frequencies of human activities on Earth increased, which led to the risk of global warming. Human actions — not natural cycle — are by far the dominant cause of global warming. The main causes of global warming driven by human action are

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Greenhouse gases (GHGs), Depletion of Ozone layer, and the population explosion.

The emission of greenhouse gases (GHGs) from human activities ~~are~~ is the principal cause of the observed rise in global surface temperature. GHGs include carbon dioxide (CO_2), Methane (CH_4), chlorofluorocarbons (CFCs), Nitrous oxide (N_2O), and direct addition of heat. These GHGs result from energy use, land-use changes, consumption and production patterns, and other societal behaviors. According to the IPCC, " CO_2 is the most significant contributor, accounting for over 61% of GHGs, followed by CH_4 at 15%, CFCs at 11%, and N_2O at 4% of the GHGs." Consequently, unchecked greenhouse gas emissions by human activity remain the central driver of climate change and other environmental disturbances.

major cause that affects the Earth's temperature. Ozone layer depletion mainly occurs due to human activities, particularly the release of CFCs, halons, and other industrial chemicals used in refrigerators, air conditioners, aerosol sprays, and foam production. As per NASA, "when these chemicals reach the stratosphere, ultraviolet radiation breaks them down and releases chlorine and bromine atoms, which destroy ozone molecules by converting ozone (O_3) into oxygen (O_2)."

According to UNEP, "Human-made ozone-depleting substances are the primary cause of the thinning of the ozone layer, particularly the formation of the Antarctic ozone hole." Due to such activities, depletion of ozone layer takes place, which results in greater penetration of solar heat to the Earth and aggravated the risk of global warming.

population explosion also contributes to global warming indirectly but strongly.

Rapidly growing human population increases energy demand, land use, consumption, and emissions. As per UN, "population growth leads to higher energy consumption, urban expansion, and pressure on natural resources, all of which intensify GHG emissions." According to IPCC, "Growth in population and economic activity are key drivers behind rising global emissions since Industrial Revolution." Moreover, increasing population causes deforestation for housing, agriculture, and infrastructure, reducing forests that naturally absorb carbon dioxide (CO_2). Therefore, population explosion driven by human activity indirectly accelerates global warming.

In conclusion, global warming is largely driven by industrial and agricultural activities, ozone layer depletion, and rapid population growth, all of which are rooted in human behavior since the Industrial Revolution.

The expansion of industries and modern agriculture has led to the burning of fossil fuels and GHG emissions.

The release of CFCs has weakened the ozone layer and disturbed Earth's natural balance - At the same, population explosion has increased energy consumption, deforestation, urbanization, and agricultural expansion, further intensifying carbon emissions and environmental pressure. Together, these three interconnected factors have accelerated change and posed serious risk to ecosystem and human life. Therefore, addressing global warming requires responsible industrial practices, strict control of harmful chemicals, and sustainable population and resource management, so that present and future generation can live in a safer and healthier environment.