



Encouragement Award

Science Writing Year 7-8

Kyna Chauhan

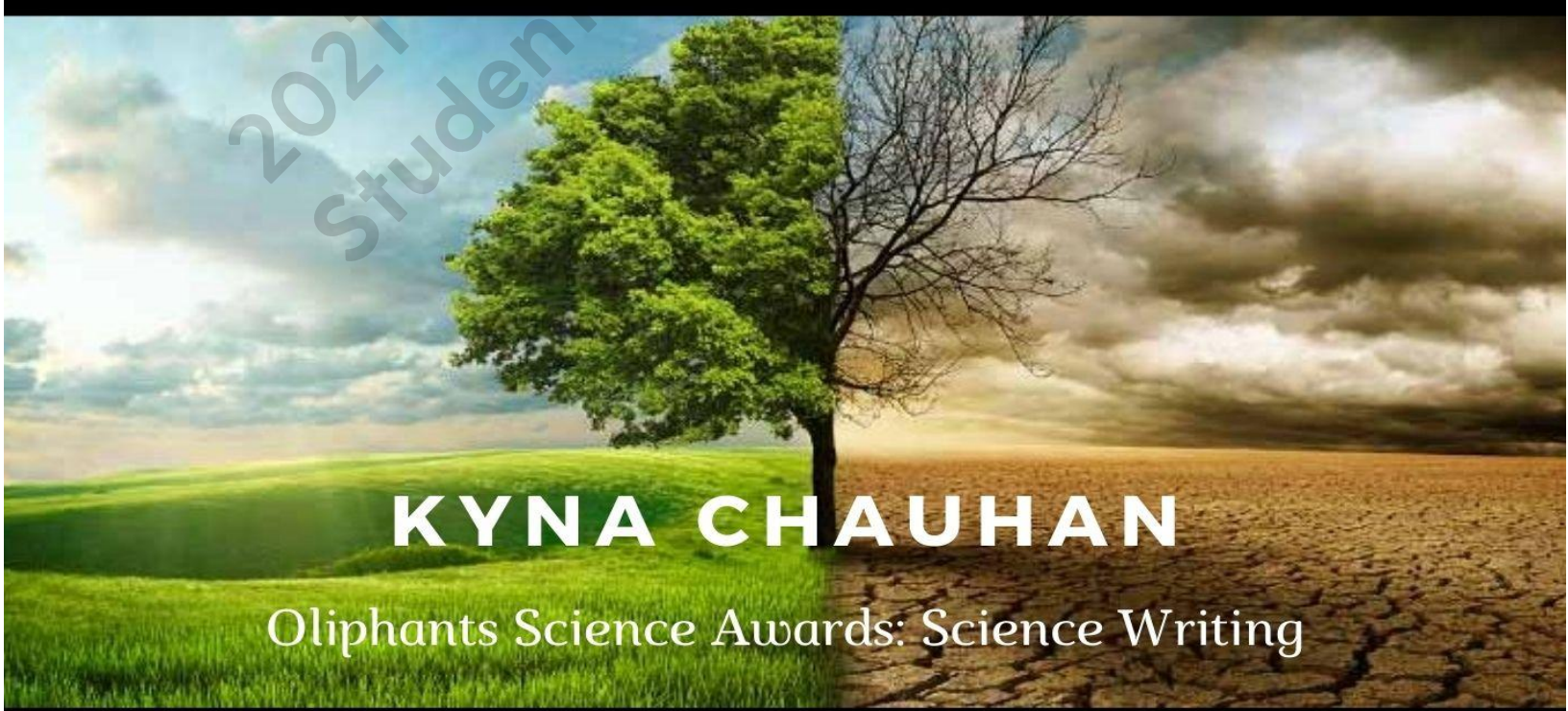
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A CRISIS CREATED BY MAN



GLOBAL WARMING



KYNA CHAUHAN

Oliphants Science Awards: Science Writing

“What is the use of a house if you haven’t got a tolerable planet to put it on?”

- Henry David Thoreau

Global warming is anticipated to have extensive, long-term and, in many instances, annihilating implications for planet Earth. It is the progressive heating of the Earth’s surface, oceans and atmosphere. This lasting heating has been observed since the preindustrial period (between 1850 and 1900).

Causes of Climate Change

This ruinous event is caused by humans. The excessive release of greenhouse gases into our climate has caused the global temperature to become one degree warmer than before the Industrial Revolution. However, the science on the human contribution to modern warming has proven that human emissions and activities have caused around 100% of the warming since 1950, according to the Intergovernmental Panel on Climate Change.

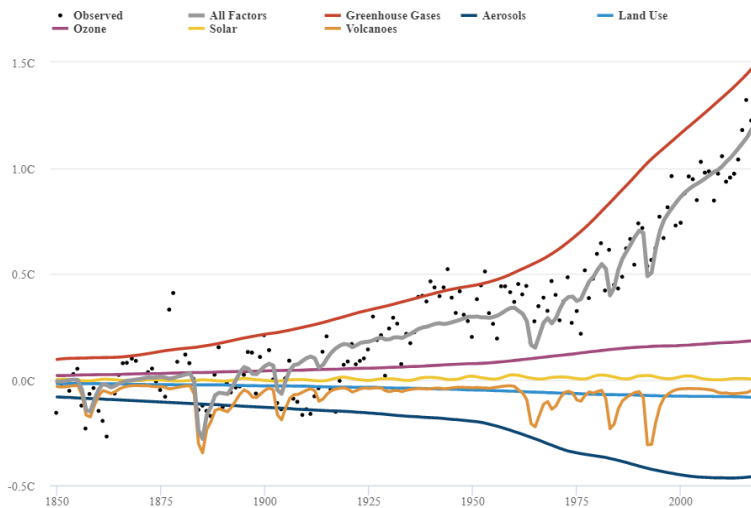
The production of greenhouse gasses is developed by the release of fossil fuels. Fossil fuels are formed by natural processes such as the anaerobic decomposition of buried dead organisms. Subsequently, greenhouse gas emissions rise from fossil fuels causing the greenhouse effect. The greenhouse effect is the trapping of the sun’s warmth in the planet’s lower atmosphere. It is a positive affair as it warms Earth to a comfortable average and keeps life on Earth healthy. However, recently the greenhouse effect has grown substantially, creating the enhanced greenhouse effect, a concerning matter for our environment. Scientists have high confidence that global temperatures will continue to escalate for decades due to this issue.

This growing cataclysm has been created by the rapid increase in human activity that led to the incessant growth of toxic gasses in our atmosphere. These gases are used primarily for the following purposes:

- 20% industry
- 6% buildings
- 14% transport
- 24% agriculture
- 25% electricity

Such activity is known as anthropogenic activity, meaning mistakes made by humanity, however, another factor that prompts climate change is non-anthropogenic activity, meaning changes made in nature. For example, the shape of continents, the shape of the seafloor, a change in the earth’s orbit and volcanic activity. Further, weather and climate are impelled by the absorption of solar radiation and the successive redistribution of that energy through radiative, advective, and hydrological processes. Such controls are never consistent, ergo generating a constant shift in the global temperature.

Global Temperatures: Human & Natural Factors (1870-2017)



Effects of Climate Change

Climate change has already had evident effects on the environment. Glaciers have shrunk, ice on rivers and lakes are cracking, plant and animal ranges have been displaced, and trees are flowering sooner. Effects that scientists had anticipated in the past are now occurring. This warming causes the altering in the earth's climate system, including its land, atmosphere, oceans, and ice.

More Frequent and Severe Weather

Higher temperatures are aggravating many types of disasters, including storms, heatwaves, floods, and droughts. A warmer climate creates an atmosphere that can collect, conserve, and drop more water, changing weather patterns in a way that wet areas become wetter and dry areas: drier. According to the National Oceanic and Atmospheric Administration, in 2015, there were ten climate disasters in the United States - that caused at least \$1 billion in losses. For context, each year from 1980-2015 averaged \$5.2 billion in disasters.

The rising number of droughts, intense storms, and floods holds, then dumps more moisture, which increases the risk to the citizens' health and safety. Lingering drought conditions jeopardize access to clean water, fuel wildfires, and result in dust storms, extreme heat events and more. Moreover, heavier rains spark streams to overflow, which damages: life and property, contaminated drinking water and more.

Higher Death Rates

Today's scientists have established that global warming is "the biggest global health threat of the 21st century". It impacts humanity in an assortment of direct and indirect manners. As temperatures climb, so do the frequencies of illnesses and death. Hundreds of heat-related deaths occur each year due to the direct and indirect impacts of heat-exacerbated, grievous

illnesses, for example, heat exhaustion, heatstroke, and cardiovascular and kidney disease. Extreme heat on average kills more Americans than hurricanes, tornadoes, floods and lightning combined.

Dirtier Air

Rising temperatures intensify air pollution by increasing ground-level ozone. It is created when cars, factories, and other sources respond to sunlight and heat. Dirtier air is linked to greater hospital admission rates and increased death rates for asthmatics. It worsens the health of those suffering from cardiac or pulmonary disease. Also, warmer conditions remarkably expand airborne pollution, which is bad news for those who undergo hay fever and other allergies.

Higher Wildlife Extinction Rates

For decades humans have seen the observable change in our planet's temperature. However, as land and sea endure change, inevitably animals are bound to disappear if they aren't able to adapt in time. According to the Intergovernmental Panel on Climate Change's 2014 analysis, many lands, fresh water, and ocean species are shifting their geographic ranges to cooler climates and higher altitudes. They are modifying their seasonal behaviours and traditional migration patterns. Nevertheless, many are still at an "increased extinction risk due to climate change."

More Acidic Oceans

The earth's marine ecosystems are under pressure as a result of global warming. Oceans are becoming more acidic, due in large part to their absorption of the excess emission. As this acidification stimulates, it poses a grave threat to underwater life, specifically creatures with calcium carbonate shells or skeletons, involving molluscs, crabs and coral. Surely, as of 2015, acidification is believed to have cost the Pacific Northwest oyster industry over \$110 million. Coastal communities in 15 states that depend on such harvests encounter comparable long-term economic risks.

Higher Sea Levels

The polar regions are notably susceptible to a warming atmosphere. Average temperatures in the Arctic are rising twice as fast as anywhere else, and the global ice sheets are melting expeditiously. This not only has severe consequences for the region's people, wildlife, and plants; its most heinous influence is on the rising sea. By 2100, it's calculated that our oceans will be approximately 1 metre higher, threatening coastal systems and low-lying areas, including entire island nations and the world's largest cities.

It goes without question that global warming assures a fearsome future, inexorably irreversible if not acted upon promptly.

Solution for Climate Change

Climate change is moving at a drastic rate. At this rate, humanity is bound to compromise under its strength if we are not cautious. Therefore, several precautions have been advised.

Renewable Energies

One of the approaches to mitigate the drain on resources presently being experienced by the planet is to shift the systems that exploit renewable energy. By producing this energy shift, the environment will be given a chance to heal. Recently, Australia's temperature has been going from bad to worse, recording 2019 as the hottest and driest year in centuries. Reducing pollution is a substantial part of the solution - and that can be achieved by utilising renewable energy.

Sustainable Transport

In several countries, the transport sector is responsible for emitting more greenhouse gasses than any other. Globally, transport accounts for the majority of the CO₂ emissions, moreover it contributes to Australia's second largest source of greenhouse gas emissions. Therefore, changing to a more sustainable method for transport is in the best interest for our environment. Several options have already been suggested and implemented across the world: green vehicles or smart motorways.

Waste Management & Recycling

Ultimately, greenhouse gasses are the reason for this catastrophic change in the atmosphere. The diminution and recycling of solid waste can assist in addressing global climate change. The distribution, application and manufacture of the consequential waste, all result in greenhouse gas emissions. The prevention and recycling of waste reduces greenhouse gasses associated with activities such as the production of methane emissions. Therefore, a lot of attention has been presented to this potential solution.

Sea & Ocean Preservation

Currently, our oceans are under great threat due to climate change. These ecosystems are responsible for recycling nutrients and regulating greenhouse gasses. In the correct balance, these processes guarantee a healthy system. Unfortunately, our oceans have been overheating and this has dire consequences. Accordingly, the preservation of the sea and ocean is in the best interest of humanity, as it may be our key link to reversing global warming.

Several studies have indicated that global warming is the greatest threat to humanity, a threat created by none other than us. However, we have been assured that all hope is not lost, as a meagre chance to right the wrong still remains. It can be safely concluded that the 21st century has taught us about humans being the largest threat to our planet. Luckily, even though time is ticking, it is plausible to reverse the irreversible and make the impossible possible.

Reference List

- Are the Effects of Global Warming Really that Bad 2021, *Are the Effects of Global Warming Really that Bad?*, NRDC, viewed 20 July 2021, <https://www.nrdc.org/stories/are-effects-global-warming-really-bad>.
- *Analysis: Why scientists think 100% of global warming is due to humans* | Carbon Brief 2017, Carbon Brief, viewed 20 July 2021, <https://www.carbonbrief.org/analysis-why-scientists-think-100-of-global-warming-is-due-to-humans>.
- Timperley, J 2020, *How our daily travel harms the planet*, Bbc.com, viewed 20 July 2021, <https://www.bbc.com/future/article/20200317-climate-change-cut-carbon-emissions-from-your-commute>.
- AZoCleantech 2008, *The Connection Between Waste Management & Global Warming*, AZoCleantech.com, viewed 20 July 2021, <https://www.azocleantech.com/article.aspx?ArticleID=15>.
- *Bycatch - WWF-Australia* 2016, Wwf.org.au, viewed 20 July 2021, <https://www.wwf.org.au/what-we-do/oceans/effects-of-global-warming-on-our-oceans#gs.6czttg>.

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