REPORT

GLOBAL WARMING IS A LOOMING THREAT TO OUR PLANET

1. INTRODUCTION: -

With rising CO2 emissions, global warming is now the greatest threat to our world. Over the last century, anthropogenic activities have immensely contributed to the rapid increase in the rate of global warming Furthermore, the rate of global warming is predicted to rise continuously in the future Several human activities such as excessive industrialization, deforestation, and discharge of harmful chemicals have primarily altered numerous climatic parameters some of which include heat content, precipitation, atmospheric moisture, crop productivity, air quality index, and many more. Therefore, such an increase in global warming at an alarming rate would eventually create an ecological imbalance that would further result in catastrophic consequences throughout the globe making it difficult for the living ecosystem to sustain. We explored the variables that contribute to global warming in this project. The main reasons for such emissions include drastic temperature change, rising population, higher yield consumption, increased usage of pesticides, diverse food items, and so on.

2. PROBLEM STATEMENT:

Global warming may be the most serious and challenging environmental issue facing our planet. Because human activities are changing the composition of our atmosphere, the climate has been rapidly warming since the Industrial Revolution. However, the issue at hand is the ongoing rise in the concentration of these "greenhouse gasses," a collection of molecules that includes carbon dioxide, methane, and nitrous oxide. As the amount of these molecules in our atmosphere grows, they hold more and more heat within the atmosphere, causing the planet to get warmer. Plant decomposition and respiration have always emitted huge amounts of carbon dioxide; yet, terrestrial vegetation and seas have always absorbed it, maintaining the equilibrium. The combustion of fossil fuels, which are used for heating, driving cars, and powering industries, produces a large portion of today's CO2. Although methane and nitrous oxide occur naturally, some extremely potent greenhouse gasses, such as hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs), are only created in industrial processes. They are the most heat-absorbing materials on the planet.

3. DATA DESCRIPTION:

There were three datasets used for the analysis-

1) Co2 data set - consisting of 25990 records, and 60 variables out of which we have used 10 variables. (GitHub)
2) Global temperatures- consisting of 39931 records and 4 variables.(| Kaggle)
3) Yield dataset - consisting of 28243 records and 7 variables.(Kaggle)

CO2 Dataset:-

Variable	Variable Type	Description
Energy Per Capita	Float	Maximum energy per capita of each country
GDP	Float	Maximum GDP of each country
Average Temperature	Float	Maximum Average temperature of each country
Cumulative CO2	Float	CO2 emissions in metric tonnes
Coal CO2 per capita	Float	Coal emissions in metric tonnes
Gas CO2 per capita	Float	Gas CO2 in metric tonnes
Methane per capita	Float	Methane in metric tonnes
Nitrous Oxide per capita	Float	Nitrous Oxide in metric tonnes
Oil CO2 per capita	Float	Oil CO2 per capita in metric tonnes

Global temperatures:-

Variable	Variable Type	Description
Countries	String	All Country names
Average Temperature	Float	Average temperatures throughout the country ranging from years 2000-2013

Yield Dataset:-

Variable	Variable Type	Description
Pesticides	Float	Amount of Pesticides used in tonnes
Hg/Ha Yield	Float	Yield in hectogram per hectare
Average Temperature	Float	Maximum average temperature of each country
Items	String	Different types of food items

4. METHODOLOGY:

The progressive increase in temperature in the Earth's climate system is the cause of global warming. The planet's current behavior is a result of 90% of the high concentrations of damaging contaminants that generate the greenhouse effect. The burning of ordinary fossil fuels is insufficient to release massive amounts of carbon dioxide into the atmosphere, resulting in acid rain (combined with other gasses). The sun, as it is the star that gives us enough heat to live on this planet, is another possibility. It allows many species to live on Earth and has never caused any harm, except for a hole in the ozone layer that does not filter the rays. Water vapor, carbon dioxide (CO2), tropospheric ozone, and methane are the principal greenhouse gasses. Above all, this implies that we must stop burning fossil fuels and instead turn to solar, wind, and other renewable energy sources, while also ensuring that developing countries have opportunities. If we do so, the Earth will cycle a portion of the carbon out of the atmosphere, bringing us back to the safe limit. We might recover to 350 by the middle of the century by reducing the use of other fossil fuels and improving agricultural and forestry practices around the world (Voltt,2019).

5. DESIGN PROCESS:

To demonstrate many aspects that affect global warming during the design phase. To demonstrate how each country's increasing energy use influences global warming. The second significant association for the analysis was between each country's GDP and energy per capita. The goal of this study was to demonstrate that rich countries with higher GDPs use more energy than poor countries. This increase in energy use has an impact on global warming and temperature. Furthermore, the data demonstrate the link between crops and how they contribute to the rise in global warming. An essential element to highlight in this analysis is how utilization influences temperature change. If a country's population grows, so does its yield, which leads to a rise in pesticide use, which leads to an increase in CO2 emissions. Wheat, maize, and soybeans had the

highest amounts of CO2 emission and consumption, according to the data. Following that, a more in-depth examination reveals the countries with the largest CO2 emissions. According to the results of several assessments, the United States, China, and Russia had the highest percentage of CO2 emissions from 2000 to 2013. The year with the largest amount of CO2 emissions was 2012. The forms of emissions that emitted the most CO2 and increased the percentage of greenhouse gasses were oil and coal.

6. KEY INSIGHTS FROM THE DATA:

Three separate datasets were used for analysis to highlight how many elements affect global warming: - The first dataset used for analysis was the CO2 dataset, which showed CO2 emission, consumption, and the relationship between CO2 and GDP with energy, among other things. This data was primarily used to display CO2 emissions for each year from 2000 to 2013. CO2 emissions came from a variety of sources, including coal and oil. Methane and Nitrous Oxide were discovered when analyzing this dataset. The yield data set utilized in the investigation was used to determine which food crop produced the most CO2. This dataset revealed a significant link between population, Hg/Ha yield (hectograms per hectare), insecticides, and greenhouse gas emissions.The final data set used for this was global land temperature, which revealed how changes in world temperature might affect CO2 emissions.

References: -

1. Topic B: Global Climate Change - Students.washington.edu. https://students.washington.edu/wasmun/topics/unep.pdf.
2. Voltt, Xora. "Global Warming Methodology." *Academia.edu*, 12 Dec. 2019, https://www.academia.edu/41274989/GLOBAL_WARMING_METHODOLOGY .