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From Natural Gases to Climate Change: Data Analysis of Multiple Eco Dynamic Sources Showing the Urgency of Cooperation Globally

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Abstract: The growing demand for natural gases across the world has contributed to increasing pollution and greenhouse gases. The main explanation for this phenomenon is that natural gas extraction causes air pollution which then spreads out to many sectors such as disturbing biodiversity and causing illnesses. I use the data from multiple Eco dynamic sources to (a) decompose the increase in demand for natural gas (b) the impacts that extraction of natural gas has caused across the world and (c) contrast the measures that nations are resorting to attempt to eradicate air pollution from extractions while also maintaining the public demand for natural gas. The findings indicate devastating results as pollution affects even the most affluent countries and eradicates even third-world nations. However, it demonstrates nations' resolve to resolve the issue as the public demands even more.

Keywords: Natural gases； Climate change； Data analysis； Multiple Eco Dynamic Sources； Global cooperation

1. Introduction

The theory of natural fuel has been a phenomenon explored by eco activists and scientists for centuries since the first unearthing of natural gas by the Greeks, who made the gas seep from the ground to light high flames. This was groundbreaking at the time since it was discovered that it could magically light air on fire and act like a more efficient version of firewood. Since then, many civilizations have come to realize the importance of natural gas, which in their eyes was a magic type of air that seeped from the grounds and could light a fire. In 500 BC, the Chinese revolutionized natural gas by transporting it from gas chambers under the ground with bamboo, which made natural gas accessible to all parts of the country. Natural gas was first commercialized in 1745 when British people lit up lamps in their houses with natural gas produced from coal, and natural gas only became more popular as the United States began to standardize natural gas as a source of light (APGA). Throughout the 19th century, natural gas was purely used as a source of light, but the Industrial Revolution pushed natural gas to more ways of use, and in turn, increased the demand for it as well (Palmer B. 2021).

The Industrial Revolution struck the world like a train; it was a sudden materialization of new inventions that pushed the world into a new era of development. During the Industrial Revolution, the demand for natural gas flourished as transportation increased around the world. In Europe, businesses flourished, and businessmen traveled to different parts of the world in pursuit of money. Natural gases were used to fuel trains that brought people to many places. On the other side of the world in the Middle East, natural gases were used as a source of heat and light. In the United States of America, new ways to industrialize natural gases increased as people realized their worth. In 1885, the invention of the Bunsen burner incentivized a new way to formulate natural gases into flames. As the world progressed into the 20th century, pipelines were built around the world to transport natural gases into different countries, so it was more accessible for everyone. The use of natural gases increased as its uses expanded to cooking, water heaters, boilers, and the generation of electricity. In 1876, the invention of a generator that produced electricity was built and revolutionized the world as electricity was a more efficient way to produce light and heat without producing the signature smell produced by burning natural gases. However, absent public knowledge at the time, the generator was fueled by burning natural gas and as more generators were built, more natural gas was needed to fuel the generators and the number of families using electricity in their homes. The increased demand for natural gas only fueled the world's fast development and disregard for any effects of natural gas. However,

the observation of worldwide climate change by German scientists in the 20th century made it obvious that burning so much natural gas was not a great idea. They discovered the principle of gas leaks (Tabuchi H. 2023), which is a process during transportation and extraction of natural gas that makes the methane in a natural gas leak into the atmosphere, creating a heat layer around the earth that steadily increases the temperature of the surface. The impacts are very clearly manifested to the world, as they pose clear health risks, increasing the chances of extreme weather and biodiversity loss.

2. Results

Climate change is a major driver of health decline, including social and ecological damage in impoverished areas. According to a 2020 study, more than 3.6 million people live in disadvantaged areas affected by climate change. According to the EPA, climate change is expected to exacerbate ground-level ozone and/or particulate matter air pollution in some areas. Ground-level ozone (a fundamental component of smog) has been linked to a variety of health concerns, including decreased lung function, increased hospital admissions and emergency room visits for asthma, and an increase in premature deaths. Heat, precursor chemical concentrations, and methane emissions are all factors that contribute to ozone formation. Particulate matter concentrations are influenced by wildfire emissions and air stagnation episodes, among other things. Climate change is expected to raise ozone and particulate matter concentrations in some areas as these factors grow (National Oceanic and Atmospheric Administration. 2021). Increased global temperatures may result in an increase in premature mortality due to worsening ozone and particle pollution. Furthermore, climate change may result in higher pollen concentrations and longer pollen seasons, causing more people to suffer health consequences from pollen and other allergens (Centers for Disease Control and Prevention. 2022). Pollen exposure can cause a variety of allergic reactions, such as hay fever. Hay fever, also known as allergic rhinitis, occurs when allergens such as pollen enter your body and your immune system incorrectly recognizes them as a threat. If you have allergic rhinitis, your body responds to the allergen by generating chemicals that produce nasal symptoms. Symptoms of allergic rhinitis can appear during specific seasons or all year long, depending on the allergen, and affect up to 60 million people in the United States each year. Allergic rhinitis symptoms include sneezing, runny nose, and congestion. Pollen can also cause symptoms of allergic conjunctivitis. Allergic conjunctivitis is an inflammation of the eye's lining (conjunctiva) caused by exposure to allergens such as pollen. Allergic conjunctivitis affects up to 30% of the general population and 7 out of 10 people with allergic rhinitis. Symptoms of allergic conjunctivitis include red, watery, or itchy eyes. People with respiratory conditions such as asthma may be particularly sensitive to pollen. Pollen exposure has been linked to asthma attacks and an increase in hospitalizations for respiratory illnesses. Every year, pollen-related medical costs exceed $3 billion, with prescription medicine accounting for roughly half of that total. Higher pollen concentrations and longer pollen seasons might potentially increase your sensitivity to allergies. This can cause asthma attacks and reduce productivity at work and school. Climate is also a factor that influences the distribution of diseases transmitted by vectors. Climate, land use, socioeconomic and cultural factors, pest control, access to health care, and human responses to disease risk all have an impact on the geographic and seasonal distribution of vector populations and the diseases they can spread. Climate variability on a daily, seasonal, or annual scale can result in vector/pathogen adaptability, as well as shifts or expansions in their geographical ranges. Such alterations can have an impact on disease occurrence through vector-host interaction, host immunity, and pathogen evolution.

The contiguous 48 states have seen average temperatures climb since 1901, with the past 30 years seeing an acceleration of this warming, according to the Epa. Since 1998, nine of the ten warmest years on record have happened. Global average temperatures exhibit a similar trend, with the last ten warmest years on record occurring entirely after 2005. Average annual temperatures rise because of global warming, while some seasons may see greater rises than others. The contiguous 48 states' average winter temperature has risen by almost 3°F since 1896. There has been a 2°F increase in spring temperatures and a 1.5°F increase in summer and fall temperatures. Extreme weather events are occurring more frequently. Considering In the past few decades, the United States has seen an increase in the frequency of exceptionally hot summer days, or highs, since the 1970s. The frequency of unusually hot summer nights, or "lows," has increased much more quickly. Less "cooling off" occurs at night, according to this pattern. While exceptionally low winter temperatures have occurred frequently in the United States, they are becoming less frequent, especially on freezing nights (lows). Record highs throughout the day have grown more frequent than record lows. There is a significant possibility of extreme weather due to this abrupt spike in temperature. Droughts are one example; over time, average drought conditions have changed across the country. The most extensive droughts occurred in the 1930s and 1950s, although the previous 50 years have been largely wetter than usual. Region-specific trends differ; generally speaking, the Midwest and Northeast have gotten wetter while the West has seen increasing drought. According to a more comprehensive score that was recently constructed, between 20 and 70 percent of the U.S. land area saw at least unusually dry circumstances at some point between 2000 and 2020. This metric hasn't been in use

long enough to be compared to previous drought trends, though. Drought conditions can harm many facets of society, including agriculture, energy production, water resources, and human health (US Environmental Protection Agency. 2024). Depending on the kind, extent, severity, and length of the drought, different effects result (U.S. Energy Information Administration. 2015). For instance, impacts on agriculture might vary from significant crop losses to decreased plant growth, However, the effects on the water supply might vary from significant water shortages to decreased reservoir levels and dried-up streams. Because they rely on land and water resources for both economic and cultural purposes, indigenous groups are especially vulnerable to the effects of prolonged droughts. Drought and climate change have the potential to harm medicinal and culturally significant plants and animals, as well as lower water availability and quality, which puts tribal inhabitants at higher risk of contracting waterborne diseases. In addition to damaging plants and animals and raising the danger of wildfires, decreased streamflow and groundwater levels can also have a wider negative impact on ecosystems.

3. Discussion

According to the CPC, Climate change is becoming a more significant contributor to biodiversity loss. Climate change has impacted marine, terrestrial, and freshwater ecosystems all around the world. It has resulted in the extinction of local species, increased disease rates, and mass mortality of plants and animals, marking the first climate-driven extinctions. On land, rising temperatures have caused animals and plants to relocate to higher elevations or latitudes, with many migrating to the Earth's poles, with far-reaching repercussions for ecosystems. The likelihood of species extinction rises with each degree of warming. Climate change has a broad impact on ecosystem health, impacting changes in the distribution of plants, viruses, animals, and even human settlements. This may increase the potential for animals to carry diseases and viruses to infect humans. Reduced ecosystem services, such as the loss of natural food, medicine, and livelihoods, can also have an impact on human health (Zang SM et.al. 2021).

4. Conclusion

All things considered; humankind finds it difficult to deal with the effects of climate change. Humanity faces hazards from harsher weather, biodiversity loss, and health problems. As the world moves forward, all we can hope for is that, united, we can overcome these effects as one giant family and conquer any remaining challenges.

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