

**Committee:** UN Environment Programme

**Topic:** The potential socio-economic impact of global climate change

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## Introduction

Since the start of the industrial revolution, the rapid development of technology has allowed individuals to live a more prosperous life. However, it is now inevitable to disregard climate change as a major issue in humanity's lives. Excessive usage of non-renewable energy and emissions of greenhouse gases is causing a serious and detrimental problem to the climate. The latest climate report from the World Meteorological Organization (WMO) forecasts that average global temperatures are expected to reach at least 1.0°C above the pre-industrial periods (1850~1900) in each of the consecutive years (2020~2025). It will become more challenging and difficult for humanity to adjust to these standards. The damage climate change has brought to human beings is obvious and if there is no consensus to this global issue, the future of our descendants will be in misery and human beings will be responsible for this.

## Definition of Key Terms

### Climate change

Often misunderstood as "weather change", climate change is the unwelcomed change of climates at locations around the Earth where it may last for more than hundreds of years. Therefore, climate change does not only mean global warming but also global cooling in areas around the Earth.

## **Green energy**

Consumers and businesses focus on sustainable, eco-friendly practices, especially in energy departments. The most popular suggestion for a proactive approach against energy usage that brings about climate change is green energy. The U.S Department of Energy defines green energy as electricity produced by natural sources such as solar, wind, geothermal, etc.. However, recent doubts about the efficiency of green energy are rising. Since 1970 environmentalists promoted the idea of environmentally friendly energy to be used and it has been recognized all over the world until now. However, renewable energy only provides about 13% of our needs. Fortunately, technology is already advanced enough for capturing energy from renewables. Also, there is an ample supply. The sun continuously radiates about 173 quadrillion watts of solar energy at Earth which is almost 10,000 times more than our needs. It is estimated that solar panels that expand several hundreds of kilometers would be needed to power humanity's needs. This may sound like a clever approach unless we don't consider efficiency and energy transportation. To maximize efficiency, solar plants must be located in places like deserts where sunlight is abundant all year-round. But those areas are far away from cities that are densely populated where energy demand is high. Therefore, green energy is difficult in practical aspects so a different approach is needed.

## **Nuclear energy**

An alternative for energy that is environmentally friendly and efficient is nuclear energy. It is often misrecognized between nuclear fission and nuclear fusion. Both fusion and fission is the physical process that produces energy from atoms. Nuclear fission is when a larger atom splits into smaller pieces. Its efficiency is considered to be 1 million times greater than other energy sources on Earth but nuclear waste becomes a byproduct which is detrimental to our environment. Nuclear fusion on the other hand is the fusion of two or more atoms to a larger atom. This is about 3 times more efficient than nuclear fission and only has a byproduct of helium. The sun also produces energy in ways of nuclear fusion. However, nuclear energy is still in need of research and more development is required.

## **Carbon emission**

For 250 years now, humans have been burning coal, oil and gas for energy. In this process, carbon in the form of carbon dioxide (CO<sub>2</sub>) has spread vastly into the atmosphere causing hazardous weather and climate conditions.

## Background Information

Rapid climate change and the negative effects it brings to society and the economy is explicit. It is the activities of socio-economic development that directly drives climate change to a severe point, and vice versa. The change of the climate does not simply mean the change in current weather. The difference is that changes in current weather are short and temporary while climate change is the alteration of average weather which occurs for hundreds of years. Therefore, climate change affects the society we reside by impacting the way we live. For instance, it may affect human health, energy usage, water supply, and even transportation systems. The influence climate change gives to human health is emerging as one of the major reasons why climate change has to be addressed. An Increase in greenhouse gases also brings about an increase in both global and extreme temperatures. Numerous communities that are especially susceptible to these changes suffer from illnesses such as heat exhaustion, heatstroke, and many more. Similarly, an increase in the frequency of natural disasters also puts people's lives in jeopardy. Damage in energy use, water supply, and transportation system are all a consequence of natural disasters. Unexpected supernatural events are impossible to prevent or to act on.

Furthermore, impacts are different in people in different regions. People that live in locations that are vulnerable to sea-level rise, drought, and storms are likely to be the worst victims of climate change. Rise in sea levels and tsunamis are no longer a fictional movie. Ocean waters themselves expand as temperature rises but also ice caps and glaciers have escalated sea levels. Capital of Indonesia, Jakarta, is regarded as the fastest sinking city in the world. 40% of the city is currently under sea level and it is sinking now at a terrifying rate of 10 inches per year. According to the National Weather Service, there have been 5 cases of significant floods in Florida all due to storms and hurricanes. Since most of the real estate in Florida is located at or near sea level, the major cause of floods are heavy hurricanes and storms. Similarly, people with occupations that are deeply intertwined by climate change such as agriculture will face greater challenges thus bringing damage to economic prosperity

directly. This change in climate unavoidably comes with a change in rainfall and temperature that are deeply intertwined with the productivity of crops.

The reason experts focus on the economic aspect of climate change impact is because monetary values such as the cost of living, potential profits, and wages can show the status of a society. Even environmental damage can be measured by gain and loss analysis of wood, agriculture, and livestock. GDP (Gross Domestic Product) and CPI (Consumer Price Index) are adequate measurements that indicate economic damage.

According to a scenario from the IPCC (Intergovernmental Panel on Climate Change) Fifth Assessment report, if climate change is left untouched, the global mean temperature is expected to rise to 2.5°C until the year 2050 and reduction in agriculture productions will lead to changes in the productivity of crops and cropland areas. Thus, diminishing the vitality of international trade. Not only food (crops) but also drinkable water will become harder to excavate since the melting of glaciers will spread seawater to places where humans had once pumped out water. Fortunately, since the economy and science grow at a slow but surely pace, enough technology and accumulated wealth will allow humans to adjust with ease. But detrimental climate change problems emerging now affects the health of contemporary individuals. Health problems such as malnutrition, respiratory diseases, and circulatory diseases are lethal consequences of climate change.

The escalating frequency of natural weather disasters is putting insurance companies and people in severe danger. Storms, droughts, and floods are the major disasters that pose a threat to the society as well as the economy. The insurance industry operates by collecting monthly payments from policyholders and keeps it in a collective pool of money. They then lend some of that money when they pay out a claim for policyholders. By measuring possible risks and estimating how much they can expect to pay out, insurance companies make profits by charging more money than they end up having to payout. However, recent climate change has accelerated and elevated the risks through frequent extreme weather events. Due to a higher probability of natural disasters, insurance companies are either losing capital or going bankrupt. Drastic loss of capital has led insurance companies to simply not offer insurance in places that have a high risk of getting stuck by natural disasters. Sites such as coastal lines that are susceptible to floods are starting to get abandoned by insurance companies due to high risk. If this happens, people living around the coastlines are financially insecure and are in danger. Insurance companies, however, are not capable of solving this problem alone and are never fully responsible for this. More proactive disaster

management, taking actions before the disaster happens, is needed rather than waiting for it to happen and then focus on the economy.

An effort that has failed to tackle this environmental change was the Kyoto protocol. The history of the Kyoto protocol goes back to 1992 when UNFCCC ( United Nations Framework Convention on Climate Change) was first adopted to address climate issues, especially on greenhouse gases. However, the UNFCCC only encouraged countries to lower their greenhouse gases. Since there was no force, countries were not willing to lower their gas emissions. Eventually, the UNFCCC was extended to the Kyoto protocol in 1997 and came to force in 2005. The principle of the protocol was “common but differentiated responsibilities”. This meant that developed countries and developing countries would have common but different responsibilities. Developed countries (countries that had 150+ years of industrial activity) were expected to be more participating in reducing greenhouse gases. While developing countries had fewer responsibilities than developed countries. One of the major goals of the protocol was for countries to decrease 5.2% on average in gas emission levels compared to 1990 levels (industrialization rose rapidly during the end of the 20th century around the world).

## Major parties involved

### IPCC

The IPCC (Intergovernmental Panel on Climate Change) is an intergovernmental branch of the United Nations that is committed to providing the world with information that evaluates climate change by scientific basis and focuses on the impact, future risks, and adaptation climate change might bring to the world. It was first created by WMO (World Meteorological Programme) and UNEP (United Nations Environment Programme) to deliver the reality of climate change to governments in a scientific way for them to make correct policies.

### WMO

The World Meteorological Organization (WMO) is an intergovernmental body of 193 member states. Originated from IMO (International Meteorological Organization), the WMO is similar to IPCC in that it discusses climate but different in that IMO focuses more on

Meteorology (weather and climate). It examines weather conditions and changes around the world with hydrology and geophysical science.

### United States of America

Climate change is giving the US various impacts economically and socially. Recent increase in coastal, river flooding, heavy precipitation, and drought is affecting the United States and rapid assessments are needed.

**Figure 1.** U.S. Greenhouse Gas Emissions by Gas, 1990–2014

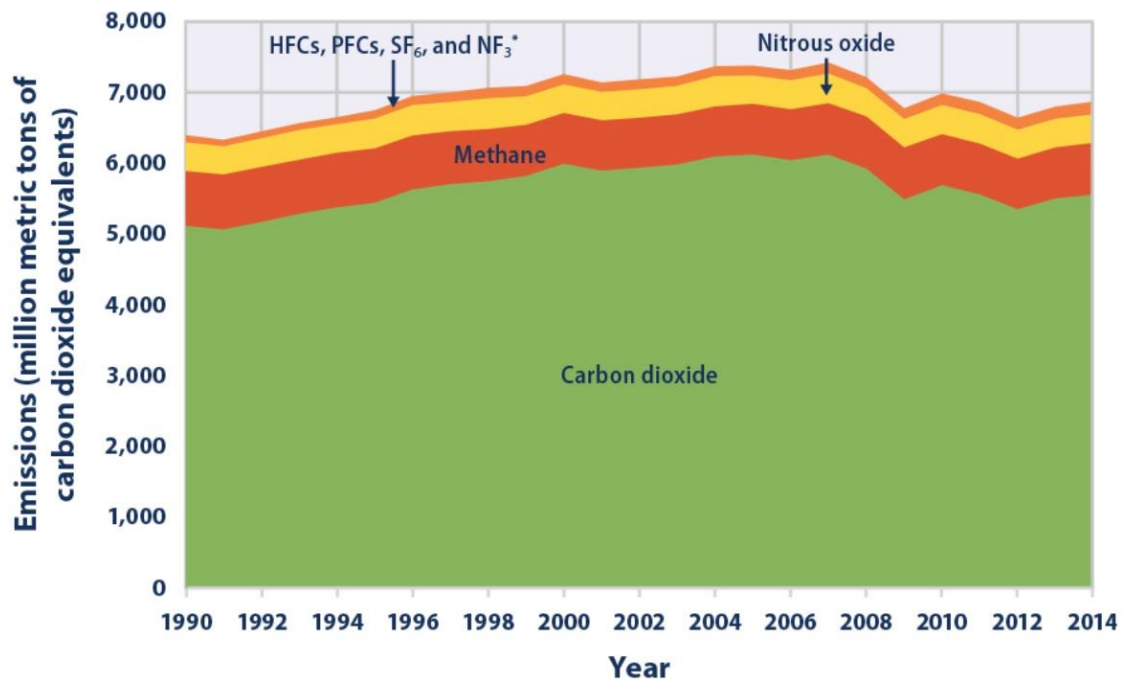


Figure 1. Shows several emissions of greenhouse gases by the US that are driving forces of climate change. Carbon dioxide, which is the primary cause of climate change, has evidently increased by 9% between the year 1990 and 2014. Electricity generation from power plants are the main sources of carbon dioxide emission. As a nation of huge influence in the climate of Earth, The United States must take serious action and take responsibility for current changes in the climate.

### People's Republic of China

Often emerging as one of the heaviest polluters of the climate, China's emission of greenhouse gases account for approximately 27% of the world's pollution. China's gas emissions were expected to decrease over the last few years however, an increase in the usage of fossil fuel has exacerbated the situation of climate change. Not only is China giving

harm to nations around the world due to pollution, but China itself is negatively affected socially and economically. Agriculture is considered as an important source of food and trade in China. However, climate change outcomes such as desertification and water supply pollution are giving a hard time for farmers and similar occupations. As the most populous and most manufacturing nation, China is capable of playing an important role in addressing climate change if proper assessments are made. There have been positive movements by the government such as limiting coal consumption and emissions, after suffering from a terrible smog in 2011. Unfortunately, this led to a hiatus in the development of the economy during trade wars. Steel and cement industries that were the main cause of the smog in 2011 significantly dropped their carbon emissions but coal consumption seems to be on the rise. Experts understand why China requires astronomical carbon consumptions but expects the nation to be fully responsible for its behavior towards climate change.

## Possible Solutions

Recent suggestions to address detrimental gas emissions is to put a price on the emissions of harmful carbon gases. This may sound like a straightforward solution to force companies to reduce carbon emissions and to solve problems within the economy. However, the pricing of carbon emissions is complicated to be feasible. Policymakers will have to keep track of all emissions that are made, which is impossible. On a similar level, constraints that are made for companies in developing countries may seem unfair and challenging for the future development of the country. Individuals are also the victims of taxes especially those in severe poverty. In fact, in London, the cost of heating has gone up by 60% over the past 5 years. This means that thousands of elderly struggle during the winter to keep warm. Currently, restrictions such as the prohibition of carbon emissions are relatively less emphasized compared to other developed countries. This eventually leads to an obvious conclusion: companies around the world wanting to step into developing companies.

Scientists and climate economists suggest that the solution will be innovation. Innovation has saved humanity and the climate for the past decades. For example, when horses were utilized throughout the world as transportation and was running low, the solution was not to put a price on horses, but it was the innovation of cars. Likewise, climate change can be solved by the innovation of green energy. However, green energy is not used widely around the world because of price and efficiency. The problem with subsidies nowadays is that it only subsidizes existing energy sources like wind turbines, solar energy, etc. those

energy sources are already known to be inefficient. Instead of investment in existing sources, investments in research for better energy is needed.

From the dawn of time, efforts to tackle climate change were faced with hurdles that experienced enough resistance. One major hurdle that has not been solved yet is that developing countries cannot afford climate change. Since fossil fuels are the cheapest and are the most cost-efficient source of energy, any country that is willing to develop its economy and end poverty has no choice but to use fossil fuel. It is the developed countries and environmental organization's responsibility to encourage and aid developing countries. An effective way is to match the expectations and possibilities of developing countries. Developing countries will need a replacement that can fulfill their needs in energy and since every nation has its potential and limits, diverse applications will be needed. For example, if a developing country has vast lands that are unused, green energy-producing wind turbines could be placed by the aid of organizations. Or nations that have the infrastructure of energy research, can be aided by technology to research even more about efficient energy.

## Timeline of Events

Date	Description of event
04/06/1992	United Nations Framework Convention on Climate Change adopted at the Earth summit in Rio de Janeiro
06/12/1988	Establishment of the IPCC endorsed by UN General assembly
16/02/2005	Kyoto Protocol initiated to force industrialized countries to limit and reduce greenhouse gases
27/09/2014	The Fifth Assessment Report of IPCC was reported to address the current status of the change in climate



04/11/2016	Effective date of Paris Agreement: undertake efforts to combat climate change and adapt to its effect
23/09/2019	World leaders around the world come together in 2019 Climate Action Summit to discuss ongoing situation of climate change

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