Impacts of Global Warming on Economy

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Abstract. Global warming is the rise in temperature of the Earth's surface and its atmosphere, resulting from human activities. It is caused by the greenhouse effect, which can be described as an increase in heat trapping gases such as carbon dioxide and methane in Earth's atmosphere. Global warming has been named a major factor for raising global sea levels through its effects on oceanic thermal expansion, melting glaciers and polar ice caps, changes in ocean patterns due to global warming. All of these changes will have an impact on economy and this paper will investigate each factor's impact. Global warming has had and will have many impacts on the economy. If global warming is to be stopped future generations should not have to pay for the pollution and other effects that occur as a result of global warming caused by human activity. Economies will be changing in response to far less energy being produced by fossil fuels, and therefore a decrease in economic output. People will also think about more renewable energy production systems in their homes, such as a solar panel. This paper will focus on the negative impacts that arrive because of global warming caused by human activity.

Keywords: Economy, Global Warming, Carbon Dioxide Emissions.

1. Introduction

Due to the increasing dependency on fossil fuels for economic growth, global warming is a worldwide problem with enormous carbon dioxide emissions [1]. Global warming causes many negative ramifications, such as decreasing productivity, rising sea levels, and injuring agriculture, which will eventually negatively affect the economy. Due to global warming, glaciers start to melt down, and the sea level rises. As a result, many coastal areas will be submerged, and the loss of the residential regions and infrastructures can count as economic losses [2]. Furthermore, floods and droughts caused by global warming will lead to a decrease in agricultural yields since excessive water or scarce water will all lead to the death of crops. A reduction in farm products will also decrease GDP [3]. According to the research, productivity is at its maximum when the average temperature is 13 Celsius and drops tremendously when the temperature increases [4]. As a result, the economy will decrease due to a drop in output that might correlate with global warming.

2. Specific impacts of global warming on economy

2.1. Impacts on productivity

Due to the increase of standard living, more energy or fuels are needed, especially the fossil fuels, as inputs to convert to goods and services. The more fossil fuels being burnt, the more gases that are emitted into the atmosphere. The increase of greenhouse gas emissions is blamed as one of the leading causes to global warming. This paper talks about how global warming has a significant impact on economy, especially with its rising temperature and unpredictable weather patterns. Climate change has an effect on economy by increasing levels of natural disasters and other harmful effects to labor productivity and development. Climate change can result in economic losses because global productivity drops at higher temperatures. Higher temperatures will alter the flow of all chemical, biological, and ecological processes, reducing overall economic productivity. At higher temperatures, for example, labor supply and labor productivity generally decrease. When these declines are added up globally, a rise in temperature will result in a decrease in overall average outputs. Rich countries, on the other hand, are less affected by temperature rises than poor countries because rich countries have more access to electricity, such as air conditioners, which can provide more comfortable

workplace conditions for laborers. In this case, poor countries suffer a greater reduction in economic growth as a result of global warming than rich countries. Global warming also causes natural disasters such as storms, floods, and droughts not only destroy crops and buildings but also destroy roads, bridges and other transportation equipment. As climate change worsens the production of food crops and livestock, poorer countries suffer greater economic losses. As temperatures rise, yield per acre decreases and the length of growing seasons decreases. and land degradation might happen due to higher temperatures. These changes in production lead to reduced income in many poor countries as crop yields decrease. When disaster strikes, the people affected loss their income sources such as employment, services and facilities that provide services. The more vulnerable an economy is to climate change the more it will suffer in the long run. In January 2007 economists at HSBC bank published a report on how global warming would affect countries around the world. The report suggested that countries like Venezuela could lose up to 35% of their GDP by 2050 due to climate change. This would be caused by severe droughts which would damage rain-fed agriculture. To conclude, global warming might result a slower growth of economies due to reduced labor productivity.

2.2. Impact on coastal regions

Sea-level rises are a consequence of global warming since more glaciers melt as temperatures rise. Many coastal regions are being impacted as a result of this condition, as coastal shorelines begin to recede and low-lying coastal areas become inundated. Damage to residential and commercial buildings, along with other valuable infrastructure including schools and hospitals, may result in significant economic and structural losses as a result of coastal flooding [5]. Figure 1 shows the values of commercial building and the number of infrastructures lying along northern Gulf of Mexico coast of the United States, which is highly vulnerable to sea-level rise due to its physical and societal factors.

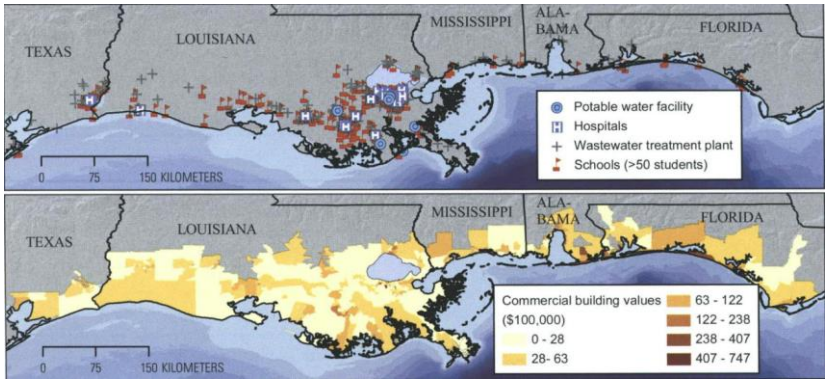

Figure. 1 Infrastructures and Physical Values of Northern Gulf of Mexico Coast of United States

Data Source: Burke, Marshall, et al. Global Non-Linear Effect of Temperature on Economic Production [J]. Nature, 2015, 527(7577): 235-239.

Furthermore, many fossil fuel infrastructures, such as oil refineries, are located along the coast [6]. Areas with a high population density and urbanization are more vulnerable. Many coastal cities are susceptible to rising sea levels and therefor face a risk for future losses. More than a thousand miles of American coastline are threatened by the risk of flooding from climate change and rising seas. The US has a coastal area of around 1.7 million km2, spanning from southern California to Maine, which is under threat of rising sea levels. Although most cities do not have an expansive shoreline, several hundred cities are facing this possibility and many billions in property damage. Increased storm activity may threaten further damage to the structures at these locations. Coastal areas will likely see rising sea levels and more intense storms as the glaciers melt due to climate change. Cities of California, Florida, and New Jersey are some of the most vulnerable to climate change. These cities exhibit substantial economic losses due us of low-lying coastal territories. The effects of sea level rise on these cities include increased storm activity and erosion as well as property damage, making it a threat to their economies [7]. Cities in Florida are also among the most affected by rising sea

levels. If a state that is experiencing rising temperatures can be affected by climate change, so can many others that have similar characteristics. Many cities in the United States have coasts with a great deal of structural value that cannot be rebuilt cheaply following significant damage from natural disasters. If the rates of global warming continue at the current rate, these populations will be faced with a number of issues. Not only are cities in coastal regions more susceptible to rising sea levels, but also hurricanes and storms become more intense and frequent as temperatures rise. Higher temperatures may cause existing storms to become even worse. Hurricane Sandy was one of the most devastating hurricanes to hit New York City in recent memory. This hurricane produced significant damage along the coastline and flooded many buildings [8]. Also, due to increased humidity due to climate change, coastal areas such as Florida may experience heavy rains during hurricane season causing severe flooding [9].

2.3. Impact on agriculture

Glaciers will melt whenever temperatures continue to rise due to global warming. As a result of receding glaciers, river flows will decrease in the long run [10]. River flows will affect millions of people because rivers are critical for agricultural irrigation and millions of people rely on them for crops. In addition, water quality will be reduced due to receding glaciers. Finally, decrease in rainfall and melting of glaciers will reduce water availability in area where water is already scarce. Some areas such as sub-Saharan Africa, many parts of South Asia and all-over Middle East have already scarce amount of water per person and it is predicted that decrease in rain fall and melting of glaciers will also affect these areas at least in the next 100 years. Decrease in rainfall due to global warming will not only lead to deforestation but also lead to decline in water level of rivers. Due to decrease in water level of rivers, people who use the river for irrigation will have less amount of harvest, which also refers to less amount of output or GDP from economic stand point. As a result, many farmers may convert their farmland into forests. Also, due to decrease in rainfall and melting of glaciers, arable land will lead to deforestation. As a result, rain forest will be replaced with agriculture. Other than water, which is important for growing crops, global warming will affect other natural resources such as air and soil, which are two crucial factors that will affect agricultural output. Global warming will lead to soil erosion and less nutrient in soil, which will also affect agricultural output and cause water pollution. Since per capita income depends on economic growth and GDP. As a result, decrease in agricultural output due to climate change will have significant effect on per capita income. Decrease in agricultural output will result in higher unemployment rate since many farmers work to support their family and friends. Global warming is predicted to cause drought in many areas, especially in sub-Saharan Africa, where agriculture is crucial and most families depend on it. Deforestation leads to soil erosion which may lead to air pollution and decrease in agricultural output. As stated above, global warming will affect millions of people. A higher level of temperature will result in a decrease in the amount of river flow, which means that many people who depend on river for irrigation will lose their jobs. The level of water will also decline, which means that the size or crop yield from agriculture will decrease as well. Global warming is a global phenomenon which is going to affect us all on this planet. Due to climate change or global warming, there will be a decrease in the amount of crop yield or other crops.

3. Solution

Despite the fact that reducing greenhouse gas emissions will cost more outputs, or GDP, which will have a negative impact on the economy in the short run. However, the benefits of limiting global warming accumulate over time, which will benefit the economy in the long run. According to Patrick and Harry's research, restricting global warming to 1.5°C to 2.0°C will produce a net loss of outputs now, but will result in benefits of thousands of trillions of dollars in outputs by 2300 [1]. There are simultaneously costs and benefits of limiting temperature rise, and economic projections are uncertain on some level due to factors that may be ignored. Nonetheless, the benefits outweigh the costs. In the

long run, depending on the value of a metric, there are a few different ways to measure changes in the economic system. Businesses will adapt to new technology and possibilities, like new ways of doing business and changing selling prices. When prices change, demand for goods and services changes. Prices can be adjusted because of global warming to make sure that everyone is getting fair pay for their work. In short-run, it may not affect every single country in a positive way but as more time goes on, it will be better for everyone involved because businesses will adjust to new technology so that their economies can operate evenly for all involved parties.

4. Conclusion

Decarbonization is necessary, but people should work to find an optimum way to slow global warming while balancing the positive and negative effects of slowing global warming on the economy. Although this paper conducted extensive impact analysis, there are still numerous factors that were overlooked, and this paper only revealed a portion of this field of study. Global warming is now widely accepted by people who have studied it and have been involved with previous treaties. However, there are many obstacles of fighting it. The primary obstacle that people have faced while trying to combat global warming is the economic aspect. In order to understand how much effect climate change has on the economy, it's necessary to understand what causes it. The main cause of global warming is carbon dioxide released from human use. When applied to any society that is heavily dependent upon fossil fuels, this plan would require massive changes in infrastructure and lifestyle. In order for people to stop using fossil fuels, at least two things need to happen. First, new sources of energy must be found and implemented into everyday life. Second, mass transportation needs to be developed or greatly improved so people have an alternative to driving their own cars everywhere they go. Both of these aspects would require lots of money. One of the biggest issues with this decarbonization plan is that it requires massive changes in the way we do things. In order for the majority of people on earth who use fossil fuels to stop using fossil fuels it would take a lot of convincing and a lot of money.

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