Effect of climate change to the economy

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# Introduction

Climate change is one of the contentious issues in the 21st Century. The research effort being conducted to establish understanding is enormous and the media attention on it is intense. Studies have been conducted to establish measures, which can be taken to address the problem of climate change in several areas. The impacts of climate change have increased worldwide and it continues to create a negative impact on various sectors of the economy. Recent research conducted by Tol (2015), concluded that the increased climate change affects various sectors of the economy such as agriculture, infrastructure, tourism, and other others. Economic research on climate change mainly focuses on three main questions. What if? So what? And What Should we do? This paper, therefore, focuses on these questions to address the effect of climate change on the economy.

The climate change taking place around the globe is the main concern to several countries. Over the last decade, the occurrences of the hurricane and other natural disasters have increased along the coastline compared to the previous year (Hood, 2017). The increased hurricane is due to climate change. Global warming, is, therefore, caused by greenhouse gases, which destroyed the ozone layer. However, it causes increase hurricane along the coastline and other natural disasters. The impact of climate change on these sectors directly affects the performance of the economy in every country around the globe. The Fourth National Assessment, which was published in 2018, indicated that if appropriate measures are not taken to curb the emission of greenhouse gases, climate change could seriously disrupt the economy of the United States (Tol, 2015). The rising of temperature above the sea level would likely impact various sectors of the economy negatively and therefore, climate change is a serious issue that disrupts the economic growth of a country. This paper, therefore, investigates the effect of climate change on the economy and to the general population worldwide.

 A study conducted by Ellis and Bygrave (2003) established that the rise in temperature above the sea level along the coastline and other regions could coast cost countries more than $650 billion every year (Cox, 2019). It is also reported that if the U.S. economy suffered lost because of climate change, other countries such as India, China, Australia, and others, which directly trade with the U.S. could be affected as well. Therefore, the effect of climate change on the economy is huge and its impact on various sectors, which play an essential role in the living standard of billion of people around the world.

# Impact on the Economy

Research indicates that since 1980, constant extreme weather condition has cost $1.6 trillion (Amadeo, 2019). It is pointed by Munich Re, one of the largest reinsurance companies that California has experienced over $24 billion of wildfires due to climate change. The cases of fire have been reported in several forests such as Amazon and others in Australia and Canada and the increased occurrence of fires could be a result of climate change. The firm made a warning that insurance companies would be forced to increase insurance premiums to cover the rising cost from the extreme weather. This could make insurance cover very expensive for several people. Scientists have also estimated that the increase of temperature by only 20 Celsius could cause the global domestic product to fall by at least 15% (Hood, 2017). Therefore, the constant rise of temperature due to climate change could cause a big fall in the global economy if drastic actions are not taken immediately to address the problem. It is estimated that the gross domestic product (GDP) would fall by almost 35%. This could be the worse economic depression more than the Great Depression, which made the global trade to fall by 25%. However, the major difference is that this depression would be permanent because it is due to climate change. The industries, which are likely to be affected, are fisheries, agriculture, tourism, and forestry. Fishermen are already seeing, the decline of lobster catches. There is also an increase in natural disasters, which have already cost almost 23 million working life years.

Moreover, climate change also creates a mass migration of people around the world. A report by the United Nations High Commissioner for Refugee indicates that since 2009, bad weather has managed to displace over 22.5 million people. It is estimated that by 2050, the number of immigrants would increase to 700 million people if serious actions are not taken to address climate change. The World Bank estimated that climate change could increase draught by 25% by 2030. This is due to increased drought and the change of rain patterns, and extreme weather, which destroy crops leading to food insecurity around the world (Amadeo, 2019).



***Figure 1: Climate change effect on the global economy***

## Agriculture

Agriculture is the most vulnerable sector to climate change. Environmental economist Professor George Heal from the Columbia School of Business pointed out that although agriculture makes up a small part of the U.S. economy and other economies especially in the developed economies, the effect of climate change to agriculture could be big (Buckland, Robinson, & Zaelke, 2018). Several states and people depend on agriculture and increased climate change could impact the economy hence decrease economic growth. Lack of proper rains and increased temperature due to climate change could affect agricultural production. The Midwest states in the United States have been experiencing a lot of rainfalls, causing abnormal floods. The historic flooding washed away farms and therefore, the products become low in most agricultural areas. The historic flood also washed away livestock, which caused a lot of losses to farmers. A study conducted by Agriculture society established that Nebraska lost approximately $440 million worth of cattle and Iowa suffered estimated $1.6 billion losses due to flood. The increased flood due to change of weather of climate change could cost several lose not in the United States, but other countries like Canada and Australia as well.

Though the hurricane has been a component of our natural weather system, the latest research points out that there have been powerful hurricane movements in the North Atlantic since the 1970s (Hood, 2017). In the future, it is predicted that there would be a more powerful hurricane due to climate change. The impact created by this trend is likely to be made worse by the rising sea level and the constant growth of the population along the coastlines. These do not affect only agricultural activities but also affect the infrastructure and other sectors of the economy. A research conducted by Guemide (2015), established that hurricane is the worse weather pattern, which has a huge impact on the agricultural sector. The hurricane washes away produce from the farms and it leaves the land bare, which cannot be used for agricultural production. For instance, regions where hurricane normal occurs like Texas in the United States, and Haiti cannot do well in agriculture and therefore, mostly depend on other states for agricultural products.

The National Oceanic and Atmospheric Administration (NOAA) experts have stated that high floods that occur affect the food supply chain and this makes it difficult for farmers to access the market. It is also stated that the rate of the planting of crops such as corn have reduced and farmers only plant 67% of the corn compared to the previous years, which was about 96% (Ellis & Bygrave, 2003). The lost of yield being experienced by farmers could cause an increase in prices of animal feeds and ethanol and therefore, it reduces the agricultural produce of farmers. It is important to establish corrective measures to address the problem associated with climate change in order to increase the production of food, which can help in increasing food supply in the marketplace.

Scientists are working around the clock to refine our understanding of how global warming affects the activity of a hurricane (Hood, 2017). Modern research has started to attribute individual hurricanes to increased global warming around the globe. For instance, research indicates that as the Earth gets warmed, the chances of a storm with rainfall like Hurricane is become common in places like Texas recently compared to previous years. Because of climate change, the occurrence of the storm has changed and it occurs more often. It is, therefore, evident that the rise of temperature, which causes the rise of sea level, is driven by the constant release of gases to the atmosphere (Hood, 2017). Climate change can be reduced by taking measures to reduce the release of greenhouse gases. Therefore, it is important to implement the use of natural gases and energy.

## Infrastructure

Studies have indicated that much of the important infrastructure is at risk due to flooding (Irma, Harvey, & Katrina, 2019). The rise of sea-level rise could easily cause a serious loss of value of assets worth trillions of dollars. It is expected to increase by double-digit within the next decade. The flood and hurricane have caused damages of rail line trunk, electricity line and roads are damaged more often by the flood. A report on Hurricane Katrina indicates that the value of infrastructure lost is worth billions of dollars. It is, therefore, evident that climate change has destroyed several infrastructures. Military bases have also become vulnerable because of climate change. A report published by the Center for Climate and Security policy institute indicates that the rise of sea level could cause a big flood on parts of the military bases situated along the Gulf and East Coast for almost three months a year. The inland military installations have also been destroyed in several countries. This destroyed cause most governments billions of dollars to repair and provide efficient maintenance of the installations destroyed by floods. A report by the Australia natural disaster management committee shows that the Australia government spends billions annually for repair and installations of equipment and other infrastructure destroyed by floods and other natural disasters including fire. The resources being used for repair of the infrastructure damaged by the flood and other disasters could be used for other economic development. Extreme weather conditions could increase the cost of rail, road and other installation and therefore put a lot of economic burden on the country.

## Tourism

The tourism sector plays an important role in the economic development of the global economy. During winter a close to two billion dollars is lost due to less snow and ice. For instance, rapid warming which occurs in the Adirondack Maintains could easily result to decline of winter activities, which could cause the decline of the economy by almost 30% (Ellis & Bygrave, 2003). As the level of water temperature rises, the quality could reduce due to several frequent and more intense algae bloom that could result in toxic. This, therefore, reduces the recreational water activities and freshwater needed for fishing activities. The rise of sea level could result in deforestation due to the submerging of islands and coastal areas. There are other destructions to the biodiversity that could make a tourism destination less attractive. The less attractive tourism destination becomes the fewer tourists would be registered. This would directly affect the country because most countries depend on tourism as direct foreign income. With fewer tourists visiting a country or regions which are known for tourists to visit the rate of revenue would decrease as well. Therefore, climate change directly affects the tourism industry and it makes a country lost billions of dollars. As illustrated in the graph below, increased decreases in the performance of an economy.

# Solution

For the last decades, several attempts have been made to address the issue of climate change. The United Nations, through its chapter UNEP, has organized workshops on environmental issues and adopted several resources. In 1992, the United Nations Convention on Climate Change was formed to address problems related to climate change. Research indicates that in December 1997, the United Nations held a consultative meeting with various stakeholders and adopted the Kyoto Protocol. The protocol highlighted measures, which must be taken by every country globally to reduce the emission of greenhouse gases. The European Community and 39 industrialized nations made a promise to reduce the emission of greenhouse gases. The committed was made by every country to reduce the emission of greenhouse gases by 18%. Recent studies have also discovered that countries have agreed to adopt green energy. According to the study conducted by Gurría (2017), the use of green energy is likely to reduce the emission of gases by almost 15% and this could be the best method to reduce the impact of climate change. Studies show that global warming is the cause of increased hurricane along the coastline. The constant warming of the Earth is the main cause of global warming resulting in the increased occurrence of the hurricane along the coastline. It is, therefore, important to use natural energy and other measures to reduce the effect of global warming globally. With the use of green energy, the greenhouse gas emission would reduce. As a result, the temperature would be reduced resulting in less hurricane and other natural disasters, which affect the agricultural, tourism and wildlife sectors.

In Australia, the use of solar and wind energy has been adopted by the government. The government has taken various initiatives to encourage people to use solar energy for lighting and other purposes. The public vehicles are also required to use natural gas instead of diesel and other oil and gas which can pollute the environment. Australia has policies which require people to reuse recyclable materials, require proper disposal mechanism to be used by every state and individuals (Renee, 2019). The cleaning of oceans and seas is also being undertaken to minimize to reduce climate change in the country. Though compared to other countries, Australia policies on environmental matters are vague. It does not have properly established policies on how to reduce the emission of greenhouse gases. In order to obtained permanent solutions to climate change, it is important to plant trees, cut off the usage of cars which consumed a lot of fuel and use natural gases instead of diesel and other unleaded gases, which are commonly used in developing countries. However, the drastic actions including shutting down of nuclear power plant which contributes a lot to the greenhouse

# Linking climate change with the economy

The climate change reduces agricultural production hence increasing the demand for food supply to the marketplace. Current research has indicated that when food produced decreases in a country, the demand becomes high, and supply gets low affecting the prices of farm-produced across the globe. The law of demand and supply states that when the demand is high, the price is high and the supply is low. Therefore, the supply of food supply has reduced drastically worldwide, increasing the prices of food. Research conducted by Ellis and Bygrave (2003), concluded that the living standard is increased in 2018 compared to the last two decades. The prices of food whether agricultural products or other foods have increased due to high food demand and low supply. The high demand for food is also due to an increased population of people in Australia and other Western nations. Research has indicated that in the last decades, there has been the immigration of people from other regions such as sub-Sahara Africa and the Middle East and Asia to Europe. This has increased the demand for food. However, due to less or low supply of food needed to the marketplace, the food prices have increased and the inflation constantly increased over the last years. It is, therefore, evident that climate change has a huge impact on the economy of every country. As shown in graph 1 a single year temperature change against the GDP, it is evident that an increase in temperature due to climate change negatively affects the economy over time.



***Graph 1: Temperatures affect the economy***

Climate change affects the performance of the economy over some time. The tourism sector could be easily affected due to climate change. As illustrated in the diagram below 2, below increased temperature affect the result to increase in the number of tourists visiting Greek. As indicated in the diagram below, a reduced temperature reduces the number of tourism and therefore, climate change is a serious issue to the growth of the economy of the country.



***Diagram 2: Climate change and economy of Greek***

# Conclusion

Research has indicated that climate change impacts negatively every sector of the economy. It reduces agricultural produce hence the high demand for food supply which results in increasing prices of food in most countries. The effect of climate change on the economy is huge and its impact on various sectors, which play an essential role in the living standard of billion of people around the world. In the future, it is predicted that there would be a more powerful hurricane due to climate change. The impact created by this trend is likely to be made worse by the rising sea level and the constant growth of the population along the coastlines. These do not affect only agricultural activities but also affect the infrastructure and other sectors of the economy.

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