

TED ISTANBUL  
MODEL UNITED NATIONS 2020  
“Protecting Future Generations”



**The Issue of Protection of Global Climate for Present and  
Future Generations of Mankind**

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**Committee:** Environmental Committee

**Issue:** The Issue of Protection of Global Climate for Present and Future Generations of Mankind

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## Introduction

*“Climate change does not respect border, it does not respect who you are— rich and poor, small and big. Therefore, this is what we call global challenges which require global solidarity.”<sup>1</sup>*

– Ban Ki-moon

As one of the most urgent issues humanity is facing today, climate change has introduced a variety of challenges that are, and will continue affecting nearly every human being on Earth in increasingly acute ways.

It has become evident that the past century’s warming is caused by the human augmentation of the greenhouse effect, and is therefore attributed to the building up of certain gases referred to as “greenhouse emissions” in the Earth’s atmosphere. Naturally, greenhouse emissions are necessary in keeping the surface temperature of the planet at an ideal level for all species to continue their lives. However, as an excess amount of these gases get trapped in the atmosphere, it prevents the heat from being released into space, eventually resulting in the temperature to go beyond the natural levels.

The United States National Oceanic and Atmospheric Administration (NOAA) and the National Aeronautics and Space Agency (NASA) concluded that the average surface temperature of the Earth has increased by approximately 1.4 F in the last century. Although this may not seem as important, it has still had drastic results on the climate. Climate change has already had catastrophic effects on the environment. Glaciers have melted, the ice on rivers and lakes is dissolving sooner than expected, plant and animal species have altered, trees are flowering earlier than the usual. The world is now facing the predicted results of climate change.

Convincing the scientific community in believing that human activity is the fundamental reason of the expansion of the greenhouse effect required nearly a century of carrying out researches and gathering data. After all, if we do not limit our greenhouse gas emissions, it will have irrevocable results in a short period of time.

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<sup>1</sup> Ban, Ki-moon. "Remarks at "Momentum for Change" Initiative." Durban. 6 Dec. 2011. United Nations. Web. 25 June 2017. <<https://www.un.org/sg/en/content/sg/speeches/2011-12-06/remarks-momentum-change-initiative>>.

## Definition of Key Terms

**Climate Change:** Representation of a series of changes in global or regional climate, directly associated with the increase in the concentration of atmospheric carbon dioxide as a result of natural processes as well as human activity. Global warming, on the other hand, is a single aspect of climate change referring to the acceleration in the global surface temperature of the Earth.

**Global Average Temperature:** Average surface temperature of the Earth achieved as a result of the analyzation of the information gathered from satellites, monthly established reports by stations which observe surface temperature and measurements of sea surface temperature principally gathered from the armada of merchant ships, naval ships and data buoys.

**Greenhouse Gas Emissions:** Heat-retaining natural and industrial gases. The Kyoto Protocol is set to reduce the emissions of six greenhouse gases including carbon dioxide, nitrous oxide, methane, perfluorocarbons, hydrofluorocarbons, and sulphur hexafluoride.

**Carbon Dioxide (CO<sub>2</sub>):** Carbon dioxide is a chemical compound present in the Earth's atmosphere, and the primary human-produced greenhouse gas. Although it is an essential component of the carbon cycle, it can appear as a result of human activities including the burning of fossil fuels.

**Fossil Fuels:** Formation of fuels which contain hydrocarbons such as coal, oil and natural gas, producing carbon dioxide when burnt.

**Carbon Footprint:** Amount of greenhouse emissions caused by a product, an individual or organization in a particular period of time.

**Renewable Energy:** Energy generated from sources that can be restored in a short extent of time such as hydropower, geothermal power, wind and solar energy.

**Deforestation:** Clearance of standing forests which contribute to a rise in the emission of greenhouse gases.

**Annex I Countries:** Developed countries which have made pledges to decrease their greenhouse gas emissions in line with the Kyoto Protocol.

**Annex II Countries:** Countries which are obligated to provide financial assistance and mechanisms to underdeveloped countries that are struggling to cope with climate change under the Kyoto Protocol.

## General Overview

Undoubtedly, climate change poses a great threat to places, species and people's livelihoods. Throughout history, the Earth has had phases of coolness and warmth, proving that climate change can, in fact, occur naturally. The intensity of the sun, volcanic explosions, and differentiations in greenhouse emission concentrations are forces that contribute to climate change. However, according to today's reports, the extensive warming of our planet since the mid-20<sup>th</sup> century cannot solely be due to natural reasons. Therefore, it is clear that human activities, essentially, are causing the natural greenhouse to alter.

The Intergovernmental Panel on Climate Change's Fifth Assessment Report illustrated that there was more than a 95 percent probability of human activities being responsible of the warming of our planet over the last 50 years.

The atmospheric carbon dioxide level is currently at approximately 412 parts per million, exhibiting a 48 percent increase since industrial activities have started, and an 11 percent increase since 2000. In addition, the Panel derived that the rise in Earth's temperatures over the past 50 years was a result of the greenhouse gases including carbon dioxide, methane and nitrous oxide.

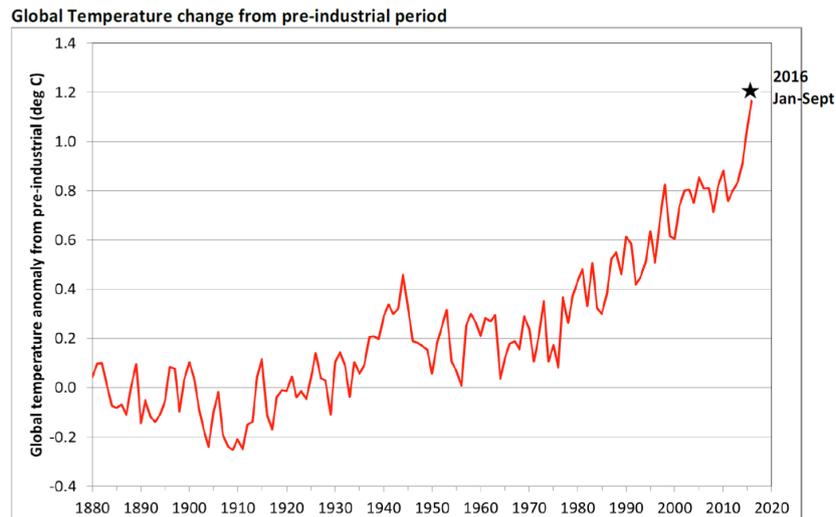
The Industrial Revolution of the 18<sup>th</sup> century marked the beginning of the usage of machinery in labour, resulting in the excessive burning of fossil fuels by combustions engines. Hence, the burning of fossil fuels such as coal and oil intensified the concentration of atmospheric carbon dioxide (CO<sub>2</sub>), releasing enormous amounts of other greenhouse gases that maintained heat. The burning of fossil fuels such as coal, oil, and gas for electricity, heat, and transportation are the primary sources of human-generated emissions.

Transportation can be attributed to a large proportion of greenhouse gas emissions, especially because of the burning of gasoline, diesel and other petroleum-derived fuels. The Intergovernmental Panel on Climate Change in 2014 gave a clear prediction in its most recent Special Report: by 2050, global greenhouse gas emissions from transportation could rise to about 12 billion tons of CO<sub>2</sub> every year— unless adaptations are made.

As it releases segregated carbon into the air, deforestation is another major reason. According to a research conducted by the National Aeronautics and Space Administration (NASA), forest-degrading activities play a role in increasing the global carbon emissions by 20 percent.

Other human activities including the use of fertilizers, livestock production, and several industrial exercises which cause fluorinated gases to be released into the air can be considered as contributors to climate change. Additionally, agricultural or road construction activities can cause changes in the emulation of the Earth's surface, resulting in local areas to warm or cool.

Despite our forests and oceans being able to carry out photosynthesis and similar forms of natural processes in order to absorb greenhouse gases from the atmosphere, it is nearly impossible for them to keep up at this point as the amount of emissions is rising rapidly. According to the World Economic Forum's 2016 Global Risks Report, unless international communities succeed in diminishing and acting accordingly to climate change, its consequences will be irreversible in the upcoming years.



### Extreme Weather Occurrences

Climate change is expected to make extreme weather events more intense and frequent. These events include anomalously hot weather cycles, precipitation and drought, wildfires due to drier conditions in many regions; hurricanes caused by the warming of the oceans, tornadoes, increased heavy downpours, and flooding.

Certain studies have concluded that climate change had an influence in particular events such as Hurricane Harvey and the European heat wave in 2003. The ongoing Australian bushfires can be given as another example, where it currently is summer and rain is not to fall anytime soon. Stefan Rahmstorf, department head at the Potsdam Institute for Climate Impact Research in Germany and a lead author of the United Nations' Intergovernmental Panel on Climate Change's Fourth Assessment Report, has made a statement regarding the bushfires being exacerbated by heat and dry conditions, which are directly associated with the presence of climate change.

### Air Pollution

Air pollution and climate change are closely associated. The main cause of CO<sub>2</sub> emissions—the mining and burning of fossil fuels—is also a major source of air pollutants, as well as causing climate change. Certain air pollutants contribute to climate change by changing the amount of incoming sunlight that the environment receives or absorbs, with some contaminants warming up and others cooling down the Earth.

### Health Risks

Climate change is expected to cause about 250,000 potential deaths annually because of starvation, and diseases such as malaria, diarrhoea and heat stress between 2030 and 2050. Areas with weak health services—especially rural areas—will be the least advanced by means of being prepared and response. Reducing greenhouse gas emissions through improved transportation, fuel and food selections may lead to better health, particularly by the minimization of air pollution.

## **Rising Seas and Melting of the Poles**

Since 1880, average sea levels have risen over 8 inches (around 23 centimetres), and annually, it rises another .13 inches (3.2 mm). In addition, excessive warming over the last century has been causing glaciers to melt, contributing to the swelling of the sea levels. This leads to devastating effects on coastal areas farther inland, exposure to erosion, flooding, the destruction of agricultural products and loss of habitat for fish, birds and plants.

## **Warmer, More Acidic Oceans**

Our oceans soak up around 25 percent of the annual production of human carbon dioxide. This drastically changes the chemistry of the surface of the sea: when the ocean absorbs the carbon dioxide, it causes the carbonic acid to be dissolved. Not surprisingly, the outcome is that the ocean becomes more acidic, negatively affecting the fragile pH balance many organisms depend on. This has a variety of repercussions for marine ecosystems, and people who rely on the ocean as their nutrition and economic source.

## **Imperilled Ecosystems**

Climate has an enormous influence on ecosystems. Warming causes species to migrate to places where the temperatures are favourable to survive, destroys their habitat, causes changes of their seasonal cycle events such as migration and reproduction, disrupts the food chain due to the elimination of critical predators or prey, the reduction of ecosystems' ability to moderate extreme events such as wildfire, draught or flooding.

While some factors only cause mild disruptions whilst operating individually, their cumulative impact can result in significant ecological shifts. For example, climate change may result in recently logged forest areas becoming exposed to erosion if it causes heavy rain storms to keep increasing.



## Major Parties Involved

### **People's Republic of China**

With the largest CO<sub>2</sub> emissions in the world, China's targets seem to be inadequate to limit the warming to below 2 degrees Celsius, or 1.5 Celsius required under the Paris Agreement. However, the Chinese government has been financially supporting the production of electric vehicles in order to reduce the number of fuel-using cars on the road. Chinese consumers bought 1.1 million electric cars—more than the rest of the world combined in 2018. Since China is not in the list of Annex I countries, it is not obligated to follow the Kyoto Protocol. Despite being the largest manufacturer of solar technology in the world, China is also the largest consumer of coal and is subsidizing the development of coal-fired power stations around the world.

### **India**

India has been investing in renewable energy more than it is in fossil fuels, as it has established a goal of producing 40 percent of its power through renewables by 2030. India is expected to increase that target as it could achieve it a decade early, having made great progress in such a short period of time. Although its National Energy Plan could be 1.5 degrees Celsius compatible if its plan of constructing new coal-fired power plants was abandoned, India's strategy is efficient to keep the warming below 2 degrees Celsius.

### **Russian Federation**

As the fourth-largest emitter of greenhouse gases, Russia's target and commitment to the Paris Agreement is seen as incompetent since it does not require the government to ratify strategies of low-carbon economic development. In addition, the internal data on greenhouse emission are out-of-date, deficient and coarse, making it challenging for international agencies to confirm progress or gather further information.

### **European Union**

The EU is among the primary adopters of the policies established to tackle climate change. In 2009, it agreed to reduce the greenhouse gas emissions by 20 percent by 2020; the target increasing to 40 percent by 2030 with the approval of the Paris Agreement. If complied fully, the EU's current policies would allow it to transcend that target. In May 2019, a series of regulations including a target of 32 percent of electricity production coming from renewables by 2030 were introduced. However, the EU is still the third-largest emitter of carbon dioxide trailing after China and the United States.

### **United States of America**

U.S.'s Paris targets were already ranked as insufficient before Donald Trump announced their complete withdrawal from the Paris Agreement in June 1, 2017. Despite the stated policies of President Trump to reconstruct the coal industry, the demand for lower priced renewable energy sources is causing to a rapid decrease in petroleum-fired power. Prohibiting states such as California to establish stricter standards of weakening vehicle emissions both domestically and within the state is seen as major step backward for the US government. In 2018, Russia and Saudi Arabia were overtaken by the US as it became the largest producer of crude oil, increasing LNG exports by 53 percent.

## Intergovernmental Panel on Climate Change (IPCC)

The Intergovernmental Panel on Climate Change is an organization established by the United Nations in 1988, with the sole aim of assessing and analysing the obtained scientific data on human-induced climate change. The Panel has released five Special Reports since 1990; all of which provide information regarding the impacts, potential risks and the adaptation process of climate change, as well as comprehensive strategies to reduce our greenhouse gas emissions.

### Timeline of Key Events

When	Event
1712	Invention of the first widely used steam engine leads to the Industrial Revolution and the use of coal in industrial activities.
1824	Earth's natural "greenhouse effect" is defined by a French physicist named Joseph Fourier as "The temperature [of the Earth] can be augmented by the interposition of the atmosphere, because heat in the state of light finds less resistance in penetrating the air, than in re-passing into the air when converted into non-luminous heat."
1896	Swedish chemist Svante Arrhenius derives that the burning of coal fuel will expand the greenhouse effect.
1927	The amount of carbon emissions occurring as a result of the burning of fossil fuels and the industry reach one billion tonnes annually.
1958	Using equipment, he had developed himself, Charles David Keeling acquires the first unequivocal evidence that CO <sub>2</sub> concentrations are rising by his measurements of atmospheric CO <sub>2</sub> in Antarctica and Hawaii.
1965	US President Lyndon Baines Johnson's Advisory Committee panel refers to the greenhouse effect as an issue of "real concern."
5-16 June 1972	The United Nations Environment Programme (UNEP) is established as a result of the first UN environment conference in Stockholm.
8 August 1975	Scientist Wallace Broecker popularizes the term "global warming" by using it in the title of a scientific article.
16 September 1987	Montreal Protocol was signed with the aim of restricting chemicals which cause damage to the ozone layer.
1988	Intergovernmental Panel on Climate Change (IPCC) is formed.
August 1990	IPCC releases the First Assessment Report.
3-14 June 1992	Governments approve of the United Framework Convention on Climate Change at the Earth Summit in Rio de Janeiro.

December 1995	The gathered evidence in IPCC Second Assessment Report suggests “a discernible human influence” on the Earth's climate, referred to as the first definitive statement of humans being responsible for climate change.
11 December 1997	Member States approve of the Kyoto Protocol. US Senate announces it will not affirm the agreement.
May 2001	IPCC Third Assessment Report is released with the proof of humanity’s greenhouse gas emissions being the main reason behind the warming seen in the second half of the 20th Century.
16 February 2005	The Kyoto Protocol enters into force as an international law for the States that are a part of it.
September 2007	The IPCC's Fourth Assessment Report illustrates that there is more than a 90 percent probability of human activities being responsible of climate change.
2011	Research concludes concentrations of greenhouse gases are rising more rapidly compared to the previous years.
2012	As the lowest recorded summer cover, glaciers in the Arctic reach a minimum extent of 3.41 million sq km (1.32 million sq mi).
27 September 2013 - 14 April 2014	The latest report on climate change from the Intergovernmental Panel on Climate Change (IPCC) documents the evidence on the potential consequences of climate change, as well as perspectives of reducing greenhouse gas emissions benefiting humanity.
January-June 2016	With an average temperature of 1.3 degrees Celsius (2.4 degrees Fahrenheit), 2016’s January to June is the planet's warmest six months ever recorded.
22 April 2016	The Paris Agreement is signed by nearly 200 Member States.
1 June 2017	President Donald Trump announces his intent to withdraw from the Paris Agreement as the United States.
23 September 2019	United Nations Climate Action Summit took place, with Greta Thunberg taking the stage to call out all the political leaders on the issue of climate change.
2020	The second commitment period of the Kyoto Protocol expires.

## Previous attempts to resolve the issue

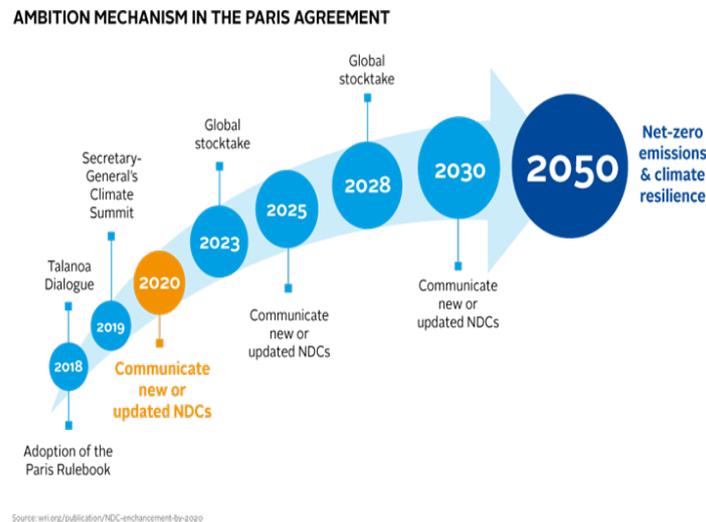
As an issue which has taken centre stage on the world agenda in recent years, what is actually being done to prevent climate change from further affecting our planet? Since all member states are suffering from the current consequences of climate change, there has been an international support from all communities to find a sustainable solution that will be able to tackle this major issue. With the establishment of several international summits including the Earth Summit in Rio, Climate Action Summit 2019, as well as the implementation of the Kyoto Protocol and the Paris Agreement within the United Nations Framework Convention on Climate Change, there has been an ongoing debate on primary environmental concerns and efforts in setting out an agenda to help prevent further eco-deflation.

## The Kyoto Protocol

As one of the most effective summits to date, the Kyoto summit has introduced a compelling protocol which has the aim of reducing carbon emissions. The Kyoto Protocol is an international agreement formed under the United Nations Framework Convention on Climate Change, aimed at setting international targets for the reduction of greenhouse gas emissions. However, although the treaty can be seen as a binding one, it is not mandatory for the countries to sign up, which notably alters the results. For example, although the international pressure is increasing, countries such as the United States of America have yet to sign up to the scheme.

## The Paris Agreement

Several countries have made pledges of reducing their carbon footprint with the Paris Agreement of 2015. Created under the United Nations Framework Convention on Climate Change, the Paris Agreement addresses the enhancement of the effort put in by the Member States to combat climate change. It has the aim of keeping the warming under 2 degrees Celsius (3.6 Fahrenheit) and achieving an even lower value of 1.5 degrees Celsius (2.7 Fahrenheit).



However, as most countries with the greatest carbon footprint are already falling behind their pledges, the targets set by the previous summits are in jeopardy. Despite the investments in renewables, formation of movements and the appearance of figures such as Greta Thunberg, who is a seventeen year old Swedish climate change activist, climate change is accelerating with the high chance bringing irreversible change with itself.

## Possible Solutions

Global response to the threat of climate change must be strengthened. Nearly all the solutions existent today depend on humans adjusting the way they live, behave, as well as produce and consume energy. Such improvements in the use of renewable energy resources such as wind and solar power, the creation of biofuels from organic waste, the determination of a price on carbon, the protection of forest and the wildlife could be made to reduce the effects of climate change by decreasing the amount of carbon dioxide present in the atmosphere.

Pursuant to the Special Report established by the Intergovernmental Panel on Climate Change, our purpose must be to keep the warming under 1.5 degrees Celsius by the reduction of greenhouse gases by 45 percent by 2030, and net zero emissions by 2050. This illustrates that all Member States should fully commit to these goals, partake in agreements and introduce the necessary regulations.

Although driving less would make a great difference in the amount of carbon emissions, the increase in the number of electric vehicles has the potential of making an impact in the upcoming decades. Walking or biking can be seen as the cleanest ways of transportation, meaning that people could be encouraged and given the opportunity to choose such methods instead of using their vehicles or taking the bus on a daily basis.

Moreover, in 1999, a citizen of California named Jay Shafer started the trend of living in tiny houses by building his first in Iowa, helping others build homes with their sizes ranging from sixty-five square feet to a hundred and thirty square feet. Micro-apartments in New York and San Francisco have been developed as their urban equivalents. According to experts, downsizing may have both cognitive and financial benefits, and definitely would encourage people to have a smaller carbon footprint.

Citizens must be further encouraged to participate in protests, in negotiation with Non-Governmental Organizations and transform the way they live by means of energy production and consumption.



## Appendix/Appendices

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