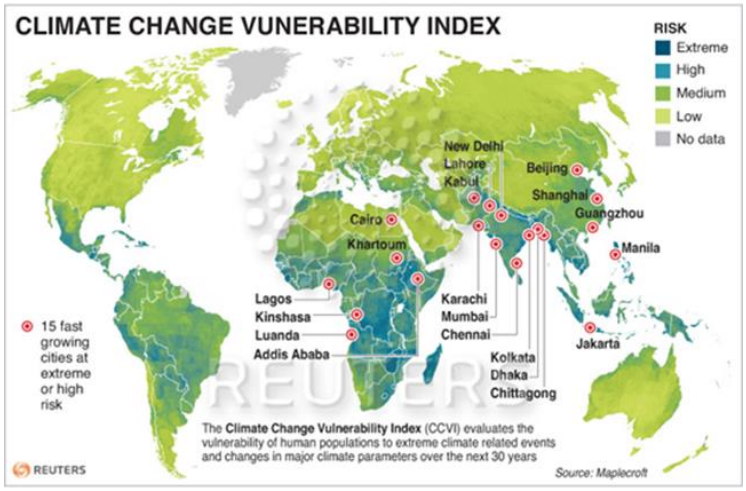
WORLD AFFAIRS COUNCIL
of Philadelphia

CLIMATE CHANGE

Topic Background for the Committee on Climate Change

"Climate change is the defining issue of our time. From the tropics to the poles, from small islands to large continents and from the poorest countries to the wealthiest. If we do not take urgent action, all our plans for increased global prosperity and security will be undone."
– **Ban Ki-moon, Former United Nations Secretary-General**

Statement of the Problem



Considered by many to be one of the most significant threats facing the global community today, climate change poses a range of potentially serious risks to human societies.[1] Based upon the work of hundreds of scientists around the world, the **United Nations' Intergovernmental Panel on Climate Change** (IPCC) has concluded that the steady rise of **greenhouse gas emissions (GHGs)** in the Earth's atmosphere is influencing global climate conditions. Furthermore, scientists and researchers believe that the changes to the climate are impacting the planet's **environment**, possibly threatening the long-term health of human, animal, and plant populations. By some estimates, if left unchecked, the atmosphere's concentration of greenhouse gases could double by the end of the century.[2]

Climate change poses multiple economic, political, and diplomatic challenges, with consequences for all spheres of life. While roughly 15 to 20 countries account for 75 percent of all global greenhouse emissions, no one country accounts for more than 26 percent of the global total.[3] Consequently, cutting greenhouse gas emissions requires broad cooperation between countries, as well as innovative solutions by governments, businesses, and individuals, alike.

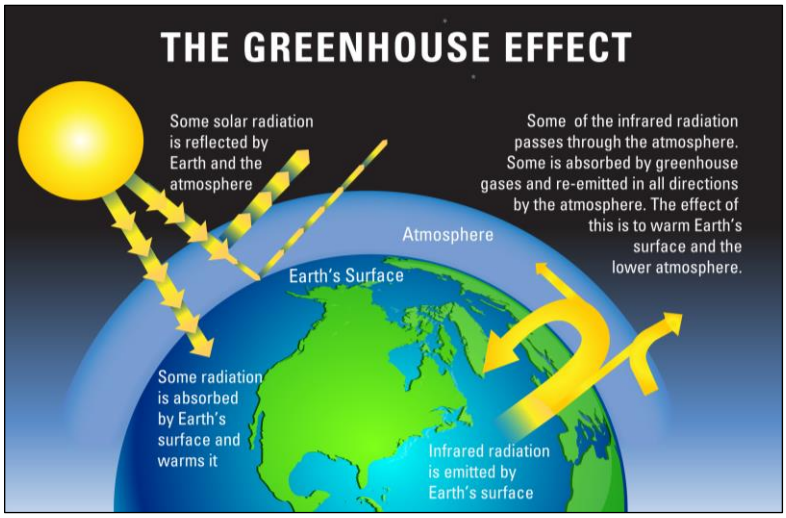
[1] (Pew Research Global Attitudes Project, June 24, 2014; Pew Research Center, November 11, 2013; Pew Research, Center for People and the Press, November 1, 2013).
[2] Future of Climate Change, United States Environmental Protection Agency, 2013.
[3] Each Countries Share of CO2 Emissions, Union of Concerned Scientist, 2011.

Defining Climate Change and Global Warming

While sometimes used interchangeably, climate change and global warming are not the same thing. **Global warming** refers only to the average increase in temperatures near the Earth's surface. Global warming may contribute to climate change by increasing ocean temperatures and melting the polar ice caps. **Climate change** refers to any distinct and measureable change in the climate that lasts for a long period of time, generally decades or longer.[4] Examples of climate change can be seen in the sustained shifts in the average global temperature, **precipitation patterns**, glacial size, sea ice coverage, and wind patterns. The causes of climate change include natural sources, like volcanic activity, shifts in the sun's energy, and/or ocean circulations[5], as well as human sources. Human activities such as the burning of **fossil fuels**, depleted water resources, and land development (e.g., **deforestation**, **urban development**) have been shown to significantly contribute to climate change.

The Greenhouse Effect

The "greenhouse effect" is a natural phenomenon that regulates the Earth's temperature.[6] As the sun shines on the planet, some **solar radiation** is reflected back into space. The remainder of the radiation is trapped by greenhouses gases and is absorbed by the land, ocean, and atmosphere. The absorbed radiation helps to warm the planet and make it **habitable** to human, animal and plant life. However, if there are too many greenhouse gases in the atmosphere, the planet will absorb too much solar radiation and will get hotter, a phenomenon known as global warming.[7]



By examining bubbles of air trapped in glaciers, scientists have determined that atmospheric levels of carbon dioxide and other greenhouse gases began rising with the **Industrial Revolution** (around 1750) as more wood and coal were burned, and more land was cleared for agriculture to support rapidly increasing populations. Additionally, when humans began to use fossil fuels like petroleum (oil), and natural gas in 1800s, the emissions of carbon dioxide, methane, and other greenhouse gases accelerated. Scientists have agreed that human activity, including the burning of fossil fuels, has contributed significantly to global warming and climate change.

Measuring Climate Change and Predicting its Impact

The international scientific community continues to build complex computer models designed to reflect the changes in the Earth's atmosphere, the rate of change, and the resulting consequences to human health. These models suggest that, since the industrial revolution, the concentration of greenhouse gases

[4] Glossary of Climate Change Terms, Environmental Protection Agency, 2016.
[5] Through a process called thermohaline, the oceans currents redistribute large amounts of heat around the planet. Pattern changes in thermohaline circulation can cause abrupt changes in the climate (Potsdam Institute for Climate Impact Research).
[6] Students' Guide to Global Climate Change, Environmental Protection Agency, 2016.
[7] What is the Greenhouse Effect?, NASA, 2019

in the atmosphere has significantly increased, putting the Earth on a path to warm about 4.5° Fahrenheit (approximately 2.5° Celsius) by 2050.[8]

Researchers also conclude that a gradual rise in the atmosphere's average temperature may lead to more extreme weather events, including drought, flooding, heat waves, and hurricanes. Policy experts also predict that, if left unchecked, an increased number of extreme weather conditions will affect international **food security**, fresh water supply, global health, and future wars and conflicts. All nations will experience the effects of climate change, however, some nations will experience these effects sooner and with more intensity. Island nations, drought-prone areas and areas affected by extreme weather will likely be most affected.

Major Threats Posed By Climate Change

No matter where you live, climate change threatens to disrupt human's environment and way of life, now and in the future. However, not all people will face the negative effects of climate change equally. Nevertheless, it is in all of our interest to take action against climate change. Below are some of the major threats of climate change:

Rising Sea Levels

As ocean waters warm and glaciers melt, sea-levels will continue to rise around the world. This will affect nearly half of the world's population as 44% of people live within 150 kilometers (93 miles) of the ocean. Places as diverse as Canada, India, Denmark, Nigeria, and Indonesia will be tremendously impacted, with long term effects on population, food systems, economics, and energy.

Extreme Weather

Throughout the world, hurricanes, tsunamis, droughts and severe wildfires among other extreme events have increased in severity and frequency in the past decade. The increase in wildfires and extreme flooding have caused significant destruction including the loss of homes and communities, destroyed infrastructure, damaged crops, and the loss of human life.

Changing Precipitation Patterns

Climate change will likely result in an increase in the number of both droughts and floods. For countries in sub-Saharan Africa and the Middle East, unpredictable precipitation patterns will have a great impact on agriculture and farming, disrupting millions of lives and livelihoods. Extreme flooding events can also lead to issues around clean drinking water, and can greatly increase disease and illness.

Higher Temperatures

A warmer earth will impact many aspects of life, especially with population growth and urbanization. Higher temperatures will increase the number of droughts and forest fires leading to greater food insecurity and water scarcity. Higher temperatures will also greatly impact poorer communities who do not have access to air conditioning or other means.

[8] Major Greenhouse Gas Reductions Needed by 2050: IPCC, Climate Central, 2014.

For a number of reasons, climate change affects **developing countries** the most.[9] Developing countries often lack the financial resources and infrastructure to prevent or slow climate related emergencies. If a developing country is hit by an extreme weather event, the government is often less able to support people suffering from lack of food, clean water or adequate housing. **Developed countries**, (for example, the United States, France, Russia, and China) are more able to respond to the threats of climate change. These countries have greater financial resources and are able to respond to the immediate needs of a population after an extreme weather event. However, developed countries have been the major contributors to climate change and have often grown using unsustainable practices – more on this later.

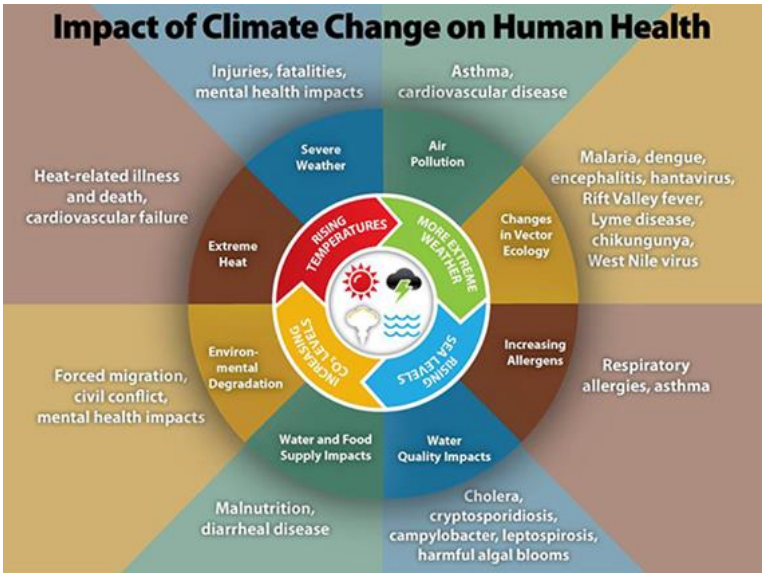
Yet as developing countries seek to expand their economies, they face increasing pressure to do so in environmentally-friendly ways, despite developed countries having achieved their status in ways that have potentially harmed the environment. Additionally, the economies of developed countries depend on **consumption** that not only hurts the environment, but the people living in developing countries. Thus, fighting climate change is a highly complex issue, as it brings together many different economic, environmental and political interests from around the world.

The Impact of Climate Change on Human Life

Equally as damaging as the environmental consequences of climate change are the consequences on human life. Damage to property and infrastructure, disruption in work and productivity, increased number of **climate refugees**, extreme drought, unstable food systems, lack of clean drinking water, and unreliable energy are all effects of a changing climate. The consequences of climate change will vary greatly based on both where you live, and how your country prepares for potential climate emergencies.

In a recent poll of over 750 experts conducted by the **World Economic Forum**, a catastrophe caused by climate change was viewed as the biggest threat to the global economy.[10] As weather patterns change, societies are disrupted in new and unexpected ways. **Supply chains** and **ecosystems** change, affecting the delivery of goods and services and all other aspects of the global market. Whether it be from the above-mentioned threats, or their consequences, catastrophe resulting from climate change is a serious threat to our current global economic system.

For example, a drought in East Africa could threaten millions with starvation. A food crisis would not only affect the people living in that area, but all people connected to the economy of that region. If crops are lost and agricultural production is down, food prices will rise, people will migrate, and essential goods and services will become unavailable. These effects will be felt throughout all parts of society, often with the burden falling hardest on children, the elderly, the poorest, and the least healthy individuals.



[9] Climate change will hit poor countries hardest, study shows, The Guardian, 2013.
[10] Global Risks Report 2016, World Economic Forum, 2016.

Each country has unique interests when it comes to climate change. Some countries may see climate change as an enormous threat with immediate consequences, while other countries may prioritize economic growth and development over climate concerns. How a country views climate change may affect how it chooses to respond to the global crisis. Global action on climate change remains difficult because each country has separate interests and responsibilities to its citizens. Understanding a country's interests, its goals, and its people are critical to being able to compromise on efforts to limit climate change.

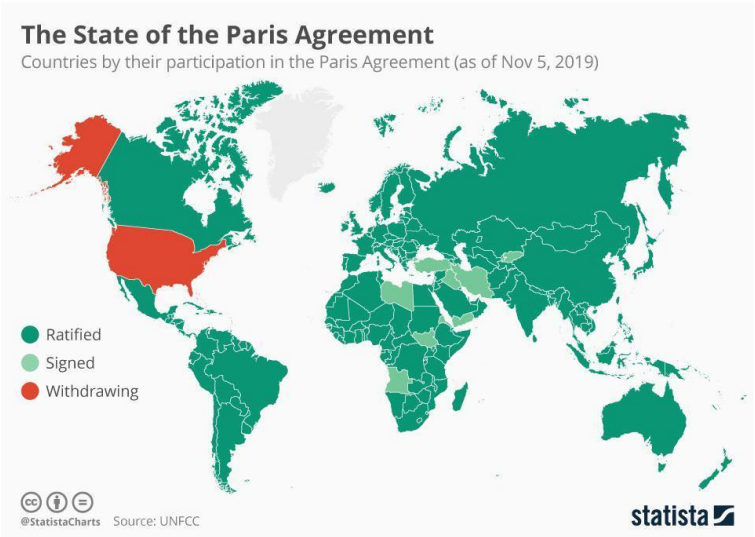
International Efforts on Climate Change

International efforts to address climate change began with the United Nations' 1988 Intergovernmental Panel on Climate Change, which was tasked with analyzing the international research and scientific data pertaining to the risk of human-induced climate change. The first report, issued in 1992, formed the basis of the *United Nations Framework Convention on Climate Change (UNFCCC)*, which has since been **ratified** by 196 countries, including all United Nations Member States.

Recognizing that the Earth's climate is a shared resource that calls for international cooperation, the UNFCCC provided a framework to tackle the complexity and challenges triggered by a shift in rising global temperatures. Specifically, the UNFCCC identified greenhouse gas emissions as the largest contributor to climate instability, and called on nations to adopt policies and best practices to reduce these pollutants. Additionally, it called for "common but differentiated responsibilities" between the wealthier, industrialized (developed) nations and the less developed countries, and further called upon those industrialized nations to support other nations by sharing their knowledge, technology, and financial resources with developing nations.

This approach is due to the fact that each country has its own interest in pursuing action against climate change. Countries who own large amounts of fossil fuels or who have economies based on the production of fossil fuels, may want different policies than those countries who invest heavily in renewable energy like solar or wind power. Developed nations, and nations that produce lots of greenhouse gases, like the United States and China, can take drastic measures to reduce their **carbon footprint**. However, such changes may be hard to undertake because they affect their economic well-being.

In addition, countries that will face the brunt of climate change the hardest, like Bangladesh, Haiti, Sierra Leone, South Sudan, and the Philippines, may have few options in order to avoid the effects of climate change. Often, making your country **carbon neutral** can be very expensive, and most nations do not have the ability to guard against extreme weather events, rising sea levels or extreme heat. In 2016, a majority of the world's governments agreed on an ambitious plan to tackle climate change, known as the Paris Agreement.



This agreement set out a global action plan to put the world on track to avoid serious consequences of climate change, by limiting global warming to below 2°C (3.6°F). The agreement is due to enter into force in 2020. Countries that have ratified the Paris Agreement, agreed to:

- a long-term goal of keeping the increase in global average temperature to **below 2°C** above pre-industrial revolution levels; and,
- to limit the increase to **1.5°C**, since this would significantly reduce risks and the impacts of climate change.

The Paris Agreement relies on each nation identifying individual goals for reducing greenhouse gas emissions and other targets for their country. Each individual nation is then responsible to the international community for reaching their individual goals. If each nation reaches its individual goals, the international goals a **2°C** or less increase is global temperatures could be met. On the 5th of October 2016, the threshold for the entry into force of the Paris Agreement was achieved. All 197 countries in the world have agreed to the Paris Climate Accords, however, notably, the United States plans to withdraw from the Accords at the earliest possible opportunity, November 4th, 2020.

In addition to the international efforts to combat climate change, significant attempts from local activists and grassroots organizations have grown in recent years. Activists, such as Greta Thunberg, have attempted to raise issues related to climate change by organizing marches, protests and gatherings. These protests have gained international recognition, leading to the September 2019 Climate Strikes which resulted in approximately seven million participants, in over 150 countries in the world. Greta's activism has sparked various movements around the world including the Fridays for Future campaign as well as the Sunrise Movement in the United States. Massive, non-violent protests continue to be among the most powerful tools that ordinary citizens possess to shape the policy decisions of national and international leaders.

The Challenge

The threats posed by climate change, in both in scale and complexity, will affect every country in the world. A crisis of this magnitude requires universal action; no single country can tackle this challenge on its own. It is essential for the international community to act swiftly and cooperatively to address the causes and issues surrounding climate change. To achieve this goal, it will be critical to understand how different countries will act on climate change given their position in the global economy. For example, coal-producing countries like Poland, South Africa and Kazakhstan, may not want to dramatically reduce their carbon footprint because of the potentially negative economic consequences. Thus, it is imperative to understand that international action on global change must factor in the many different motivations for pursuing sustainability and climate resiliency. In this committee, delegates will come together to discuss these issues and debate the responsibilities that individual countries have with respect to this growing global concern.

Questions to Consider

1. What is climate change? How is it similar or different to global warming? Does climate change affect just one country or the entire world?

2. Why does climate change affect different places on Earth in different ways? What are areas of the world that might be most affected by climate change?

3. What are some of the major threats posed by climate change? Who is likely to be most affected by these threats?

4. What are fossil fuels? How does the burning of fossil fuels affect climate change?

5. What are greenhouse gases? What are some causes for the increase in greenhouse gases? What can somebody do to reduce the amount of greenhouse gases that they produce?

6. How does your assigned country view climate change? Does your assigned country's economic sector rely on producing fossil fuels like oil or natural gas?

7. What policies has your assigned country already undertaken to manage greenhouse gas emissions? What policies or measures can your country pursue that will achieve the greatest reductions in greenhouse gas emissions?

8. What are the biggest contributors to greenhouse gas emissions in your country or global region?

9. Which interest groups (businesses, industry, etc.) in your assigned country have the most influence on climate policy decisions?

10. How can renewable energy play a role in your country or region's efforts to reduce GHG emissions?

Glossary of Terms	
Term	Description
Biophysical systems:	The living and non-living surrounding of an organism or population, including the factors that influence the evolution, development, and survival of that organism or population.
Carbon footprint:	The amount of carbon dioxide and other carbon compounds emitted due to the consumption of fossil fuels by a particular person, group, etc.
Carbon Neutral:	No net release of carbon dioxide into the atmosphere, often by offsetting carbon emissions by planting trees or other carbon-capturing plants.
Climate change:	A change in global or regional climate patterns, in particular a change apparent from the mid to late 20th century onwards and attributed largely to the increased levels of atmospheric carbon dioxide produced by the human use of fossil fuels.
Climate Refugees:	Refugees are people who are forced to leave their home communities in search of safety and/or security. A climate refugee is forced from their home due to weather events, such as gradual rising sea levels or climate related wildfires.
Consumption (economic):	The use of goods and serves by households and individuals.
Deforestation:	The permanent destruction of forests in order to make the land available for other uses. Deforestation prevents carbon dioxide from being captured by plants and leads to greater amounts of greenhouse gases in the atmosphere.
Developing countries:	Countries that do not have complex economic systems, often relying on agricultural, mining or other natural resources for economic activity. Often these countries are poorer and seek to grow their country by advancing their economic systems and infrastructure.
Developed countries:	Nations that have a stronger economic systems, and lots of industrial activity. Although developed countries are often richer, they are more likely to produce greater amounts of greenhouse gases and negatively impact the environment.
Ecosystems:	A group of interconnected elements, formed by the interaction of a community of organisms with their environment.
Environment	The surroundings or conditions in which a person, animal, or plant lives or operates.
Food security/insecurity:	The state of being with/without reliable access to a sufficient quantity of affordable, nutritious food.
Fossil Fuel:	A natural fuel such as coal, oil, or gas, formed in the past from the remains of living organisms. When burned, fossil fuels contribute greatly to the amount of greenhouses gases in the atmosphere and thus, climate change.
Global warming:	A gradual increase in the overall temperature of the earth's atmosphere generally attributed to the greenhouse effect caused by increased levels of carbon dioxide, and other pollutants.
Greenhouse effect:	The greenhouse effect occurs when radiation from the sun hits the earth and is trapped by greenhouse gases such as carbon dioxide. The greenhouse effect is natural, and is important for life on earth, however, if too many greenhouses gases accumulate in the atmosphere, the greenhouse effect can become too strong, leading to issues around global warming.
Greenhouse gases (GHGs):	Gases such as carbon dioxide, carbon monoxide, and methane, which can build up in the atmosphere and trap heat, contributing to global warming.

Habitable	the surroundings or conditions in which a person, animal, or plant lives or operates.
Industrial Revolution:	The transition to new manufacturing processes in the period from about 1760 to sometime between 1820 and 1840. The Industrial Revolution greatly affected the planet, as more fossil fuels were burned to meet the demand of a growing world.
Infrastructure	The basic physical structures necessary for a society to function. This includes transportation systems like roads, bridges and trains, as well as economic infrastructure such as banks.
International security:	Also called global security, refers to the collection of measures taken by states and international organizations, such as the United Nations, European Union, Association of Southeast Asian Nations, and others, to ensure mutual survival and safety.
Migration:	The movement by people from one place to another with the intentions of settling, permanently in the new location. The movement is often over long distances and from one country to another, but internal migration is also possible.
Precipitation patterns:	How often, where, when, and to what extend rain, snow, sleet, or hail that fall to the ground.
Ratify:	To sign or give formal consent to (a treaty, contract, or agreement), making it officially valid.
Solar radiation:	Radiant energy emitted by the sun, which heats the planet, feeds plants and makes life possible on Earth. Watch out! Too much solar radiation could lead to sunburn!
Sustainability:	The idea that individuals and communities should strive to protect the environment and its resources in order to create a world habitable for future generations
Supply chains:	The sequence of processes involved in the production and distribution of a commodity. The supply chain for a pineapple would include the grower (farmer), the transportation (truck driver, boat or plane), the seller (supermarket) and the consumer (you!).
United Nations' Intergovernmental Panel on Climate Change (IPCC):	The United Nations body that assesses the scientific, technical and socio-economic information relevant for the understanding of the risk of human-induced climate change.
Urbanization (Urban development):	As the global population continues to grow, more and more people are moving toward cities, and suburbs. This has meant that forests, and other ecosystems are being destroyed in order to house and feed the growing global population.
Water scarcity:	The lack of sufficient available water resources to meet the demands of water usage within a region.
World Economic Forum:	A nonprofit foundation committed to improving the state of the world by engaging business, political, academic, and other leaders of society to shape global, regional, and industry agendas.