**UNITED NATIONS CONFERENCE ON CLIMATE CHANGE:**
**Working Together: Saving Tomorrow Today**
**Global Classrooms: London Background Guide**

In December 2011, the Conference of Parties of the International Committee on Climate Change will meet in Durban, South Africa to map out the world's plan of action to address one of the greatest issues of our time. This will be a critical event, and will be attended by government ministers, industry representatives, environmentalists and charities from around the world, all of whom will seek to influence this important agenda. The conference is officially referred to as the 17th session of the Conference of the Parties (COP 17) to the United Nations Framework Convention on Climate Change (UNFCCC). A central focus of the conference will be to secure a global climate agreement as the Kyoto Protocol's first commitment period (2008–2012) is about to end. Global Classrooms: London's conference will take place at the same time as the COP17 meeting.

**Global Classrooms: London Committees:**

**IPPC Executive Committee 1:**

Climate Change mitigation, adaptation, technology and finance

**IPPC Executive Committee 2:**

Climate Change mitigation, adaptation, technology and finance

**IPPC Africa 1:**

Climate Change mitigation, adaptation, technology and finance for Africa

**IPPC Africa 2:**

Climate Change mitigation, adaptation, technology and finance for Africa

**IPPC Asia 1:**

Climate Change mitigation, adaptation, technology and finance for Asia

**IPPC Asia 2:**

Climate Change mitigation, adaptation, technology and finance for Asia

**IPPC Latin America 1:**

Climate Change mitigation, adaptation, technology and finance for Latin America

**IPPC Latin America 2:**

Climate Change mitigation, adaptation, technology and finance for Latin America

**IPPC Pacific Islands and Low-lying Countries: (IPCC PILLC)**

Climate Change mitigation, adaptation, technology and finance for PILLC

**Security Council:**

Please see Security Council background Guide

## What is Climate Change?

The Earth's climate has always experienced change. There have been times in the prehistoric past when the Earth was very hot, and other times of cooling, when much of the northern hemisphere was continuously buried under sheets of ice. These changes have been the process of natural cycles of heating and cooling.
However in recent years, something new has happened –the earth is rapidly heating up, a process called 'Global Warming', as a result of the rapid growth and development of industrial human society. While the extent to which humans cause or impact upon climate change has in the past been a contentious subject,
it is undeniable that these changes are occurring at a faster and faster rate and may soon begin to threaten human society as we know it.

## What Causes Global Warming?

All life on Earth is built from carbon – it is one of the main building blocks of the bodies of animals and plants. Over many millions of years as dead animals and plants have become buried in the soil or under the sea, the pressure from the weight of the earth has pressed this carbon into new different forms: oil, coal, and natural gas. Since the industrial revolution 250 years ago, human beings have been digging these "fossil fuels" out of the ground, and burning them as a source of heat and power. Use of these fuels has transformed human existence, creating the modern world. However, when "fossil fuels" are burnt the energy and the carbon within them is released into the atmosphere as carbon dioxide ($CO_2$) At heart, what we have done is moved carbon that was buried in the earth into the skies. Carbon dioxide exists naturally in the earth's atmosphere along with other gases such as oxygen, but in recent history human activity has caused the amount of carbon dioxide in the atmosphere to greatly increase. Carbon dioxide is a "greenhouse gas". Greenhouse gases in the atmosphere are the primary cause of climate change. They trap heat from sunlight in the Earth's atmosphere rather than allowing it to radiate into space, resulting in Global Warming and climate change. As this warming takes place it threatens to transform the natural systems on which human societies depend.

## Is It Real???

For many years Global Warming was a controversial topic. Many people argued that it did not actually exist. Others said that even if it did exist it was part of the Earth's natural heating and cooling cycle and was not caused by the actions of human beings. However, today the vast majority of scientists agree about Global Warming and its causes. In fact over 99% of scientific papers published in recent years support that Global Warming exists and that it has been caused by human beings.
The case against Global Warming is generally not made by scientists but by people who do not believe in it because of their cultural or religious values and beliefs, or their economic interests. For example, for many years leading oil companies supported and publicized the work of the few scientists who challenged the existence of Global Warming. In addition certain countries such as the United States and Australia had governments that did not accept Global Warming or "climate change." However, over the past year this has changed. Today both of these nations accept that concerted action to combat the causes and effects of climate change is urgently required. Even

the oil companies now accept the reality of this challenge. Current debates tend to focus on how great the impact of climate change will be, how rapidly its effects will be felt, and what actions, if any, should be taken to slow or stop it.

## The Effects of Global Warming on our Planet's Climate

In recent years the temperature of the planet has increased rapidly. Average yearly temperatures of the air and the oceans are currently at the highest level ever recorded. Rising temperatures have had a number of effects:

• **Shifting weather patterns:** As the Earth's temperature changes, weather patterns have transformed. This has resulted in a number of disturbances which may be linked to severe droughts in Africa, southern Europe, Australia, and North America.

• **Melting Ice Caps:** Much of the Arctic and Antarctic regions of the world are covered in permanent ice and great glaciers. With the warming of the Earth this ice has begun to melt. Some scientists believe that within 15 years the polar (Arctic) ice cap will completely disappear, and become ocean. As the ice melts, the water in it floods into the oceans, raising the levels of the ocean around the world. The melting of the ice caps is already causing great challenges to many species of animals, including the polar bear, which may become extinct.

• **Species displacement:** As temperatures shift, plants and animals that have adapted to a specific climate are forced to move to cooler locations. Some species that are unable to do this will become extinct. Other species that are problematic to humans, such as malaria-carrying mosquitoes, may move into parts of the world that were previously too cool for them.

**Acidification of the Oceans**: As more carbon dioxide enters the atmosphere, some of it is absorbed by water in the oceans. This causes the oceans to become more acidic. Since more acidic waters absorb calcium it makes it harder for coral reefs to form, and for sea creatures to form shells. This could have a huge impact on oceanic ecosystems, endangering many marine life forms.

## Potential Impacts of Climate Change on Human Beings

**Inequality of cause and effect:** Global Warming has been largely caused by the people of the developed world. For example the average American produces 20 times more carbon dioxide each year than the average Bangladeshi. But the poor and vulnerable around the world are being most affected by the changes climate change is creating. It is hard to see how the United Nations can meet any of the **Millenium Development Goals** to eliminate poverty and improve human life unless it succeeds in addressing climate change.

**Food Crisis:** As the climate changes, food production is threatened. Extreme weather means that crops are threatened by **drought** or **floods**. This, along with population growth, poor farming practices, and the replacement of food crops by crops that are turned into **biofuels** such as ethanol, has led to a global food crisis. Prices of basics such as wheat, rice and corn have increased rapidly. People living in dry areas such as Ethiopia and Sudan have been particularly affected by famine caused by drought and the ever growing desert. Additionally, damage to

oceanic systems caused by Global Warming may make life more difficult for nations in which fish play a major part of the diet or economy.

**Water:** Fresh water supplies are endangered by Global Warming. Much of the world relies on the slow release of water from glaciers or snow. Glaciers around the world are slowly disappearing, When these are gone, drought may affect millions of people, particularly in the Indian subcontinent. Climate linked flooding may be the cause of fresh water system contamination, while shifts in weather patterns could be the cause of drought.

**Displacement and Migration:** Global Warming may make some nations uninhabitable.

**Small Island states** such as Tuvalu in the South Pacific may completely disappear under rising seas.

**Rising seas** also threaten the existence of many of the world's coastal cities, such as New York, Mumbai, and London. It is estimated that over 1/3 of Bangladesh could be flooded in the near future. Already rising salt water is damaging food production in 20% of that country. These and problems linked to drought (see above) are likely to cause mass migration of people creating millions of **climate refugees**. As populations compete for increasingly scarce resources such as good land and **fresh water,** tension and **war** become more likely.

**Questions to Consider:**
1. What actions can the UN take to help people adapt to the effects of Global Warming?
2. What should be done for people of small island states whose nations disappear due to Global Warming?

**The UN focuses on 4 key themes in order to tackle climate change. These are 1) Mitigation, 2) Adaptation, 3) Technology, 4) Finance.**

## Mitigation: What can be done to halt climate change?

Amongst the most important ways to slow or "**mitigate**" climate change is to stop the amount of carbon dioxide and other greenhouse gases being released into the atmosphere. Over the past 100 years, most of the carbon added to the atmosphere has come from "developed" countries such as the countries of North America and Europe. People in these countries tend to use a lot of fuel to power cars and airplanes, gas or coal to heat their houses, and electricity to power their appliances. The recent rapid development of nations such as India and China also means that the amount of carbon released into the atmosphere is increasing.

**Questions to Consider**
1. Why might it be harder for people in developing nations to adapt to climate change?
2. Who should pay costs associated with helping people adapt?

## Some Key Ways to Mitigate Climate Change Are:

**Energy Efficiency**: The most obvious way to slow down greenhouse gas emissions is to burn fewer fossil fuels. To do this energy should be used more efficiently. This can be done through making appliances more energy-efficient (using long-life lightbulbs, for instance), making buildings more efficient (through better insulation or heating systems), making transport more efficient (creating more public transport, driving smaller vehicles, promoting use of bicycles and walking). A key element in energy efficiency is promoting **lifestyle changes.** Key lifestyle changes could include: less use of airplanes, buying and consuming less, driving smaller cars or walking, working closer to home, eating foods grown locally instead of shipped or flown long distances, shifting to a vegetarian diet (meat is less energy efficient to produce), etc.

**Finding Alternatives to Carbon-Based Fuels:** If we use less oil, gas and coal we will put less carbon in the atmosphere. One way to do this is to get energy from other sources. Amongst these are nuclear energy, which comes from the splitting of uranium atoms and does not produce carbon. This is a controversial source of power, as nuclear energy produces dangerous radioactive waste and can cause deadly releases of radiation into the atmosphere (for example, the Chernobyl Disaster in 1986 which contaminated many of Europe's crops and is said to have caused over 4,000 cancer deaths in the surrounding area). Other alternatives are "sustainable" sources of energy which are carbon-free such as wind, tides, hydroelectric (dams), and solar power: but these each have their own disadvantages in addition to their obvious benefits to the environment.

**The Key Role of Technology:** For sustainable energy to reach its full potential we will need rapid technological change. For example, cars run on cleanly generated electricity need powerful batteries, so they can run a long time. Until such batteries are developed such cars remain only a dream, although the development of hydrogen-powered vehicles (as currently being investigated) may also have potential as a cleaner source of power. Even if technologies are created, they may be too expensive to compete with the cheap energy provided by oil and coal. It is also unclear how developing nations would pay to use this energy.

**Questions to Consider**
1. What can be done to promote the development and adaptation of new technologies?
2. For Research – Are there any technological innovations which seem especially promising or exciting?
3. What can be done to ensure that poor nations have access to technology that may impact upon climate change?

**Strengthening and Protecting Natural Systems:** The world's oceans and forests play a key role in keeping our planet cool. As they grow, trees absorb carbon dioxide from the atmosphere, as does ocean plankton. In much of the developed world forests have already been destroyed, but there remain huge forests in nations such as Brazil, Indonesia and Malaysia. Unfortunately, these forests are shrinking quickly as trees are chopped down and sold for timber, or lands are cleared to grow crops such as soybeans or palm oil. Rapid **deforestation** endangers species, threatening our planet's **biodiversity.** Protecting forests can be difficult as local people, many of whom are poor, would understandably rather sell land or illegally chop down trees than go hungry, while **corrupt** politicians may prefer bribes from logging companies or agribusinesses to protecting the planet. Some ask why people in the developing world should not seek to use natural resources to get out of poverty, when the developed nations in the world have already destroyed their local environments to become wealthy.

**Questions to Consider**
1. What actions could be taken to encourage the people of developing countries to protect their forests?
2 .Should nuclear power be part of the solution to climate change?

## International Cooperation

In order to halt climate change, the nations of the world have sought to create agreements in which each nation acts to reduce the amount of carbon it releases each year. This is called a **Carbon Cap**. Getting such agreements has been difficult. The first major agreement , called the Kyoto Protocol, called for different levels of reduction for different types of country. Developed nations were asked to reduce their emissions to the same levels as in 1990, while industrialized countries as a whole to reduce their emissions of greenhouse gases by 5.2% by 2015. Different countries have different targets – for example the target for the nations of the European Union is 8% reductions. However, developing nations were not given numerical targets, as their emissions per capita were already low and they were not seen as the primary cause of the problem. Additionally the Kyoto Protocol was not initially signed by two major polluters: the United States and Australia.
The Kyoto agreement allows developed countries (also called **Annex 1 countries**) to "reduce" their emissions through a number of mechanisms. Through the **Clean Development Mechanism** if a developed country helped a poor country to reduce its emissions, for example by helping a poor country build a hydroelectric dam, the developed country can count this reduction of towards their own carbon quota. Another mechanism is **Carbon Trading. Carbon Trading** means that if a country reduces its emission by more than its target, it can make money by "selling" its extra carbon credit to a country that is having trouble meeting its targets.

**Question to Consider**
Do you think Carbon Trading and the Clean Development Mechanism will help halt climate change?

**COP 17:** This year's Conference on Climate Change, which will take place in Durban, South Africa, in December 2011 is especially important since governments have undertaken the mission to come to a binding agreement on the next steps to take regarding climate change in the period after 2012, which is the year in which the Kyoto Protocol expires. Changes of government in the US and Australia have brought optimism that a meaningful agreement may be reached, but the position of large developing nations such as India and China (which is now the World's largest emitter of greenhouse gases) remains unclear. In addition many countries seem unlikely to meet their climate targets under the Kyoto accords.

**TERMS AND CONCEPTS:**

**Climate Change:** a variation of the earth's climate that can be directly or indirectly attributed to human activity.

**Greenhouse Gasses:** The atmospheric gases responsible for causing global warming and climate change. The major GHGs are carbon dioxide (CO2), methane (CH4) and nitrous oxide (N20). Less prevalent --but very powerful -- greenhouse gases are hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF6).

**Atmosphere:** The gaseous envelope surrounding the earth.

**Drought:** The phenomenon that exists when precipitation has been significantly below normal recorded levels.

**Mitigation:** In the context of climate change, a human intervention to reduce the sources of greenhouse gases. Examples include using fossil fuels more efficiently for industrial processes or electricity generation, switching to solar energy or wind power, improving the insulation of buildings, and expanding forests and other "sinks" to remove greater amounts of CO2 from the atmoshphere.

**Annex I countries:** The industrialized countries listed in this annex to the Convention which were committed to return their greenhouse-gas emissions to 1990 levels by the year 2000 as per Article 4.2 (a) and (b). They have also accepted emissions targets for the period 2008-12 as per Article 3 and Annex B of the Kyoto Protocol. They include the 24 original OECD members, the European Union, and 14 countries with economies in transition. (Croatia, Liechtenstein, Monaco, and Slovenia joined Annex 1 at COP-3, and the Czech Republic and Slovakia replaced Czechoslovakia.)

**Emission Trading:** One of the three Kyoto mechanisms, by which an Annex I Party may transfer Kyoto Protocol units to or acquire units from another Annex I Party. An Annex I Party must meet specific eligibility requirements to participate in emissions trading.

**Clean Development Mechanisms:** A mechanism under the Kyoto Protocol through which developed countries may finance greenhouse-gas emission reduction or removal projects in developing countries, and receive credits for doing so which they may apply towards meeting mandatory limits on their own emissions.

**Joint Implementation:** A mechanism under the Kyoto Protocol through which a developed country can receive "emissions reduction units" when it helps to finance projects that reduce net greenhouse-gas emissions in another developed country (in practice, the recipient state is likely to be a country with an "economy in transition"). An Annex I Party must meet specific eligibility requirements to participate in joint implementation.

**Environmental Sound Technologies:** Technologies that protect the environment, are less polluting, use resources in a more sustainable manner, recycle more of their wastes and products, and handle residual wastes in a more acceptable manner than the technologies for which they were substitutes.

## FURTHER SOURCES FOR RESEARCH:

COP17 Conference: http://www.cop17-cmp7durban.com/

United Nations Framework Convention on Climate Change, http://unfccc.int/2860.php

Intergovernmental Panel on Climate Change, http://www.ipcc.ch/

United Nations Environmental Programme, http://www.unep.org/