

Global Issue: Global Climate Change

Jigsaw Activity Description: Each group member will read about a major impact of global climate change. After reading, they will complete Part I of the student activity sheet. Next, all the group members will share the information they recorded in part I with each other. Once the group as a whole has learned about the five major consequences of global climate change, each member will individually complete the five questions listed under Part III on the student activity sheet.

Jigsaw Card Information:

1. Heat-Related Illness and Disease

As temperatures rise, so do the risks of heat-related illness and even death for the most vulnerable human populations.

In 2003, for example, extreme heat waves caused more than 20,000 deaths in Europe and more than 1,500 deaths in India. Scientists have linked the deadly heat waves to climate change and warn of more to come.

In addition to heat-related illness, climate change may increase the spread of infectious diseases, mainly because warmer temperatures allow disease-carrying insects, animals and microbes to survive in areas where they were once thwarted by cold weather.

Diseases and pests that were once limited to the tropics — such as mosquitoes that carry malaria — may find hospitable conditions in new areas that were once too cold to support them.

The World Health Organization (WHO) estimates that climate change may have caused more than 150,000 deaths in the year 2000 alone, with an increase in deaths likely in the future.

2. Stronger Storms

Scientific research indicates that climate change will cause hurricanes and tropical storms to become more intense — lasting longer, unleashing stronger winds, and causing more damage to coastal ecosystems and communities.

Scientists point to higher ocean temperatures as the main culprit, since hurricanes and tropical storms get their energy from warm water. As sea surface temperatures rise, developing storms will contain more energy.

At the same time, other factors such as rising sea levels, disappearing wetlands, and increased coastal development threaten to intensify the damage caused by hurricanes and tropical storms.

3. Rising Seas

As the Earth heats up, sea levels rise because warmer water takes up more room than colder water, a process known as thermal expansion. Melting glaciers compound the problem by dumping even more fresh water into the oceans.

Rising seas threaten to inundate low-lying areas and islands, threaten dense coastal populations, erode shorelines, damage property and destroy ecosystems such as mangroves and wetlands that protect coasts against storms.

Sea levels have risen between four and eight inches in the past 100 years. Current projections suggest that sea levels could continue to rise between 4 inches and 36 inches over the next 100 years.

A 36-inch increase in sea levels would swamp *every* city on the East Coast of the United States, from Miami to Boston.

Worldwide, approximately 100 million people live within three feet of sea level. Sea level rise associated with climate change could displace tens of millions of people in low-lying areas – especially in developing countries. Inhabitants of some small island countries that rest barely above the existing sea level are already abandoning their islands, some of the world's first climate change refugees.

4. *Economic Losses*

Climate change is affecting businesses and economies at home and around the world. If action is not taken to curb global carbon emissions, climate change could cost between 5 and 20 percent of the annual global gross domestic product, according to a British government report. In comparison, it would take 1 percent of GDP to lessen the most damaging effects of climate change, the report says.

These global costs will be felt by local communities and businesses:

- In southern New England lobster catches have plummeted because of heat stresses and growing parasite threats due to rising sea temperatures.
- Ski resorts located in the lower altitudes of the Swiss Alps have difficulty obtaining bank loans because of declining snow.
- In Lake Erie, climate change may significantly *lower* lake levels, altering shoreline habitats and costing millions for the relocation of ports and shore infrastructure.

Globally, more intense hurricanes and downpours could cause billions of dollars in damage to property and infrastructure. Declining crop yields due to prolonged drought and high temperatures, especially in Africa, could put hundreds of thousands of people at risk for starvation.

High sea temperatures also threaten the survival of coral reefs, which generate an estimated \$375 billion per year in goods and services.

5. Wildlife at Risk

Rising temperatures are changing weather and vegetation patterns across the globe, forcing animal species to migrate to new, cooler areas in order to survive.

The rapid nature of climate change is likely to exceed the ability of many species to migrate or adjust. Experts predict that one-fourth of Earth's species will be headed for extinction by 2050 if the warming trend continues at its current rate.

Many species are already feeling the heat:

- In 1999, the death of the last Golden Toad in Central America marked the first documented species extinction driven by climate change.
- Due to melting ice in the Arctic, polar bears may be gone from the planet in as little as 100 years.
- In the tropics, increased sea temperatures are causing more coral reefs to “bleach,” as the heat kills colorful algae that are necessary to coral health and survival.
- Several U.S. states may even lose their official birds as they head for cooler climates — including the Baltimore oriole of Maryland, black-capped chickadee of Massachusetts, and the American goldfinch of Iowa.

Resource:

The Nature Conservancy: Impacts of climate change

<http://www.nature.org/initiatives/climatechange/issues/>

Jigsaw Activity: Global Climate Change Impacts

Part I: Instructions- Read your information card regarding one of the five main impacts of global climate change. While reading, answer the following questions:

❖ Global Climate Change Impact: _____

1. Explain how the impact you read about is a consequence of global climate change.
2. What are the social, political, and environmental implications of the consequence you read about?
3. How many people will be impacted?

Part II: Instructions- Use your notes from Part I, to teach your group members about the impact of climate change you learned about.

Part III: Instructions- After learning about all the consequences of global climate change, answer the following questions:

1. Compare the social and environmental impacts of two of the five impacts of global climate change.

Climate Change Impact	Social Impact	Environmental Impact

2. Of the five impacts of global climate change, which is the most frightening to you? Why?

