



Global Warming

Climate Change

Student Research Project, Enrichment
Projects, Vocabulary and
Climate Change Fact Sheet Handouts!



Everything You Need to Teach this
Important Topic to Your Students!

Grades 5th and 6th
By Gina Kennedy



Earth's Changing Climate Research Project

Directions: Answer all the questions below on another sheet of paper. Staple this paper to your work before you turn it in.

Answer all the questions in complete sentences. Your information should be presented in a neat and organized manner.

Go to this website or any other science information website to complete the activities below:

http://tiki.oneworld.net/global_warming/climate_home.html

Using the information you have researched, answer questions 1-12 below:

1. What makes the temperatures cooler on earth?
2. Describe a gulfstream.
3. Climate is like a huge machine. What drives this huge machine? Why?
4. Based on the scientist's prediction on this website, what year will it be when the sun blows up? What will cause this to happen?
5. On this website, the scientists compare the climate to the myth of "Pandora's Box" in which she was overcome by curiosity and told never to open a box and she wasn't happy when she opened it and found horrible things. According to the scientists, how is the changing climate similar to Pandora's Box?
6. How is the Earth's atmosphere similar to a greenhouse? Explain.
7. Why is it scary that the Antarctica is losing more and more ice every year? What impact could that have on us?
8. Why is it that poor people could suffer the most when the climate changes?
9. Why can storms become more violent and unpredictable as the climate changes?
10. What type of person would insist that the climate is not changing?
11. What took place in Kyoto, Japan?
12. Make a list of things you can do to help stop global warming.



Follow-up Projects:



Choose two projects to complete from the list below.

1. Create an eighteen-frame cartoon. The theme should be **“Global Warming.”** In your cartoon include a hero who fights to keep the Earth cool.
2. Create a brochure to hand out to others educating them on global warming and its long-term effects on our Earth.
3. Write a two-page letter to the President of the United States describing your thoughts about climate change and the things you'd like to see him or her do about it!
4. Using a shoebox or other box to create a diorama or display of the before and after effects of climate warming. One side of the box should be a certain biome or landscape before climate change and the other side should be the same biome and landscape after the effects of global warming.
5. Create a set of ten animal trading cards on 3" x 5" index cards. Choose ten animals that are at risk of being extinct due to climate change. On one side of each card, illustrate a color picture of the animal. On the other side of the trading card, list the name of the animal and five facts that make that animal unique and why the animal's existence is being threatened by climate change.
6. Create a poster-sized vision board of what you'd like the Earth to look like 100 years from now. Include photos from magazines, newspapers or online and include quotes about the Earth and Earth's creatures. Arrange the items artistically to express your thoughts.

"Global Warming/Climate Change"

Project Rubric:

The projects were complete and all the necessary components were included.....40 Points _____

Spelling, Punctuation, Grammar.....20 points _____

Creativity and Originality.....20 Points _____

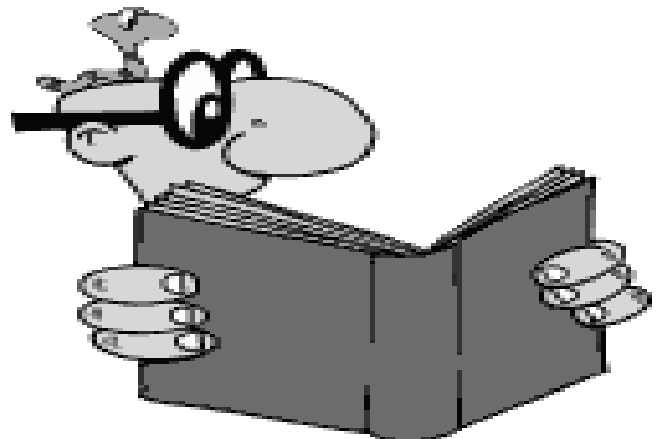
Projects are Attractive and Organized.....20 Points _____

Total Possible.....100 Points_____

Student's Name:

Total Points:

Grade:



Climate Change Facts Handout!

Fact #1: Burning Fossil Fuels: Over the past 150 years, industrialized countries have been burning large amounts of fossil fuels such as oil and gas. The gases released into the atmosphere during this process act like an invisible 'blanket', trapping heat from the sun and warming the Earth. This is known as the "Greenhouse Effect".



Fact #2: Farming: Believe it or not, cows' eating habits contribute towards greenhouse gases. Just like us, when cows eat, methane gas builds up in their digestive system and is released in the form of... well "gas"! This might sound funny, but when you imagine that there are almost 1.5 billion cows releasing all that gas into the atmosphere, it sure adds up!



Fact #3: Deforestation: Forests absorb huge amounts of carbon dioxide – a greenhouse gas – from the air, and release oxygen back into it. The Amazon Rainforest is so large and efficient at doing this that it is often called 'the lungs of the Earth'. Sadly, many rainforests are being cut down to make wood, palm oil and to clear the way for farmland, roads, oil mines, and dams.



Fact #4: Wildlife: Climate change is already affecting wildlife all over the world, but certain species are suffering more than others. Polar animals – whose icy natural habitat is melting in the warmer temperatures – are particularly at risk. In fact, experts believe that the Arctic sea ice is melting at a shocking rate – **9%** per decade! Polar bears need sea ice to be able to hunt, raise their young and as places to rest after long periods of swimming. Certain seal species, like ringed seals make caves in the snow and ice to raise their pups, feed and mate.

It's not just polar animals who are in trouble. Apes like orangutans, which live in the rainforests of Indonesia, are under threat as their habitat is cut down, and more droughts cause more bushfires.

Sea turtles rely on nesting beaches to lay their eggs, many of which are threatened by rising sea levels. Did you know that the temperature of nests determines whether the eggs are male or female? Unfortunately, with temperatures on the rise, this could mean that many more females are born than males, threatening future turtle populations.



Fact #5: How People are Affected: Climate change won't just affect animals, it's already having an impact on people, too. Most affected are some of the people who grow the food we eat every day. Farming communities, especially in developing countries, are facing higher temperatures, increased rain, floods and droughts.

Everyone loves a good cup of coffee, (around **165 million** cups of the stuff are poured every day in the United States alone), but we probably take for granted just how much work goes into growing coffee and tea. Environmental conditions can affect the flavor and quality plus it needs a very specific rainfall to grow. In Kenya, climate change is making rainfall patterns less and less predictable. Often there will be droughts followed by huge amounts rain, which makes it very difficult to grow the ingredients necessary to make coffee.

Farmers might then resort to using cheap chemicals to improve their crop to earn more money, even when long-term use of these chemicals can destroy their soil.

These are just a few of hundreds of ways that climate change will affect the everyday lives of people.



Fact #6: What You Can Do to Help Stop Global Warming:

You can do a lot! It's simple to make a difference to keep the Earth healthy. Try some of these tips to reduce the amount of carbon dioxide you add to the atmosphere.

- Instead of traveling in a car, use public transportation, walk, or ride your bike when you can. Biking or walking 10 miles each day instead of riding in a car can save up to 1.9 tons of carbon dioxide from entering the atmosphere every year.
- Reduce and reuse things as much as possible. Factories emit lots of carbon dioxide when making new products. (Buying products that are made with recycled glass and plastic also emits carbon dioxide, though less so.) Fix your appliances and clothes instead of buying new products. Good thing holey jeans are back in style!
- Wash your clothes in cold water, and hang them to dry.
- Electronics use energy even when they're turned off, so unplug them when you're not using them. It could save your family about \$200 a year on its energy bill.
- Eat less meat and dairy. Farm animals, er, *emit* another heat-trapping gas, methane. And some studies have found that livestock account for about half of the world's heat-trapping gas emissions.
- Buy locally grown and in-season foods and products to reduce emissions from transporting products.
- Wear a warm sweater at home in the winter instead of turning up the heat, and open your windows instead of blasting the air conditioning in the summer.

Global Warming/Climate Change Vocabulary Project

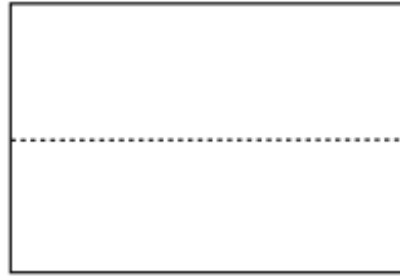
Directions: Read through all the vocabulary words on the vocabulary list below that are important terms when studying global warming and climate change. Choose twenty words from the list and create a **“Global Warming/Climate Change Mini-Book Picture Dictionary”**. On each page of the dictionary include the term, its definition, and an illustration of the word. Create a cover page for your dictionary as well.



How to Make a Mini-Book, Double or Triple it for More Pages.



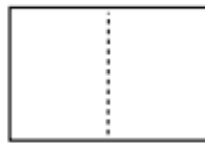
1. One sheet of white paper.
12" X 18" is a good size to use.



2. Fold in half lengthwise. Also known as a "Hotdog Fold".



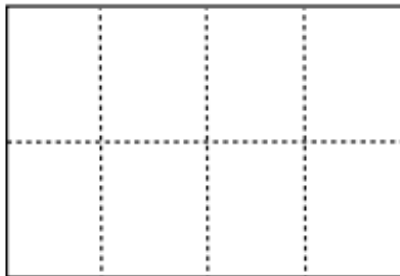
3. Fold in half again.



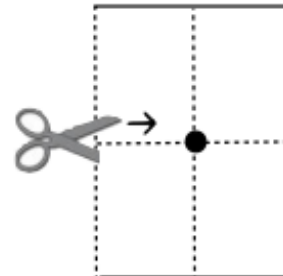
4. Fold in half again.



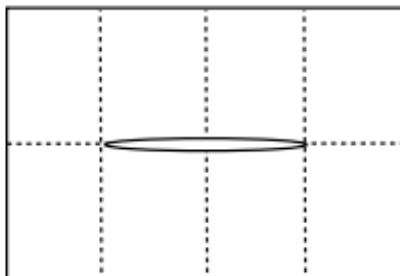
5. Now you have a very small folded sheet of paper. But it isn't a book yet.



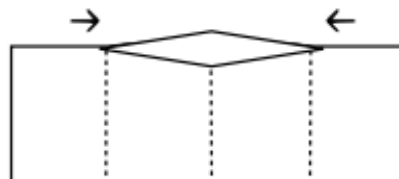
6. Unfold everything. Now it is a big sheet of paper with lots of fold lines.



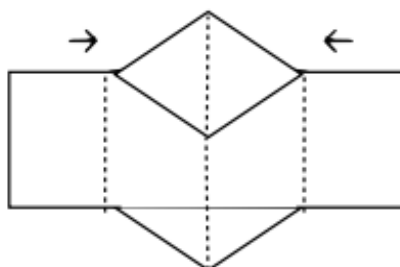
7. Fold in half in the middle- this time a "Hamburger Fold".
Make a mark with your pencil in the center of the folded sheet. Take your scissors and cut from the *folded edge* to the center dot. Stop cutting at the dot!



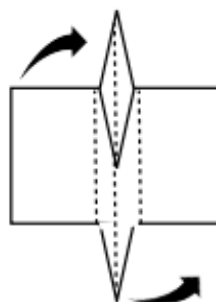
8. Unfold your sheet of paper. It should look like this with an open slit in the middle. Fold it in half length-wise again. (Hotdog Fold.)



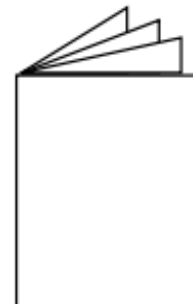
9. Push folded edges towards center allowing the slit to open up into a diamond shape.



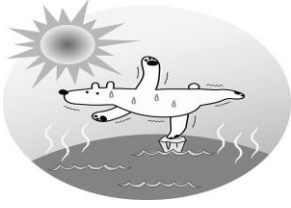
10. Keep pushing edges together until diamond becomes a slit again, perpendicular to folded edges.



11. Fold one edge toward slit and the opposite slit toward folded edge.



12. Be sure to go over the creases to make them sharp. Now you have a small six-page book!



Climate Change/Global Warming Vocabulary

- 1. Ecosystem** – a natural community of plants, animals, and other organisms and the physical environment in which they live and interact.
- 2. Habitat** – the place in the environment where a plant or animal lives.
- 3. Atmosphere** – a mixture of gases, such as nitrogen, oxygen, and carbon dioxide, that surrounds the Earth.
- 4. Weather** – the current conditions of the atmosphere at a particular place and time. Some characteristics of weather are temperature, humidity, precipitation, cloudiness, wind, and atmospheric pressure. Weather conditions are temporary and change frequently.
- 5. Precipitation** – any moisture that falls to Earth, such as rain, snow, hail, sleet, or mist.
- 6. Climate** – the pattern of weather over a long period of time. Weather patterns for about 30 years can be used to describe the climate of a particular place.
- 7. Global Climate** – the average climate of the entire Earth.
- 8. Climate Change** – a significant change in the climate over time.
- 9. Fossil Fuel** – an energy-rich substance type of fuel that is created from dead plant and animal material trapped between layers of rock deep within the Earth. Over millions of years, heat and pressure transform this material into fossil fuels. Some examples of fossil fuels are coal, oil, and natural gas. Humans burn fossil fuels to make energy. When fossil fuels are burned, they release carbon dioxide, a greenhouse gas.
- 10. Coal** – a dark-colored rock that is mined from the Earth's surface and can be burned to create energy. Coal is a type of fossil fuel.
- 11. Oil** – a dark-colored liquid that can be found deep in the Earth. It can be refined to make gasoline, diesel, asphalt, and plastics. Oil is a type of fossil fuel.
- 12. Natural Gas** – an odorless, colorless gas found in the Earth. Natural gas is a type of fossil fuel.

13. Greenhouse Gas – a natural or human-made gas that traps heat in the atmosphere. Examples of greenhouse gases include water vapor, carbon dioxide, methane, and ozone.

14. Water Vapor – water that is present in the atmosphere as gas. Water vapor is an example of a greenhouse gas.

15. Carbon Dioxide – a colorless, odorless gas that is released from the burning of fossil fuels, such as coal, oil, and natural gas. Carbon dioxide is an example of a greenhouse gas.

16. Methane – a colorless, odorless gas that is produced when plants, animals, and garbage decay. It is produced naturally and as a result of people's activities. Methane is the most abundant greenhouse gas.

17. Ozone – a gas made up of three atoms of oxygen bonded together. Ozone high in the atmosphere protects the Earth's surface from harmful ultraviolet radiation from the sun. Close to earth, ozone is a pollutant created from other pollutants that react with each other. Ozone can cause health problems in humans. It is an example of a greenhouse gas.

18. Ultraviolet Radiation – a type of invisible radiation that is released by the sun. Being exposed to ultraviolet radiation can cause sunburn and sometimes skin cancer and eye damage. We use sunscreen to block ultraviolet radiation from entering our skin so that we don't get sunburned or skin cancer.

19. Greenhouse Effect – the process by which greenhouse gases in the atmosphere trap heat from the sun and reflect it back to Earth rather than letting it leave the planet.

20. Global Warming – when more and more greenhouse gases accumulate in the atmosphere, they trap more and more heat near the Earth's surface. As more heat is held within the Earth's atmosphere, the temperature near the Earth's surface gradually warms up. This is called global warming. In other words, global warming occurs when there is "too much" of the greenhouse effect. Although the overall global temperature is warming, some places on the Earth may experience different climate changes. It takes an enormous amount of energy (heat) to change the climate of the whole planet.

21. Adaptation – human actions that respond to climate change in a way that minimizes its effects on ecosystems and on humans. For example, if the climate is getting warmer, we might wear light-weight clothing more often in order to adapt to an increase in hot weather.

22. Mitigation – taking actions in order to decrease the amount of greenhouse gases in the atmosphere. For example, we might drive an electric car instead of a gas-powered car so that less carbon dioxide is released into the atmosphere.

23. Carbon footprint – the total amount of greenhouse gases released by a person, family, building, organization, or company each year. A person's carbon footprint includes the amount of greenhouse gases released from direct use (such as heating a home or driving a car) and from indirect use (such as the amount of fuel needed to produce a good or a service).

24. Renewable Resource – a natural resource that can be made or regrown as fast as it is being used. Some examples are wind power or solar energy, which are both used to make electricity. Fossil fuels are NOT renewable resources because they take millions of years to make, and we are burning them more quickly than they are being formed.

25. Extreme Weather Event – severe weather such as a blizzard, tornado, severe thunderstorm, or heat wave.

26. Drought – a period of unusually dry weather that causes significant shortages of water for ecosystems and for humans.

27. Infectious Disease – an illness caused by bacteria, viruses, parasites, or other organisms that enter and grow in the human body. Not all bacteria, viruses, and parasites that enter or live in the body cause disease. Some infectious diseases can be spread from person to person.

28. Invasive Species – a plant, animal, or other organism that does not naturally live in a particular environment but has been introduced there, often by humans. An invasive species can harm native species, ecosystems, and create problems for people.

29. Pollutant – a substance that contaminates the air or water. Pollutants can cause problems in ecosystems as well as health problems in humans.

30. Allergen – a substance that causes allergies. Examples include dust, mold, and pollen.

31. Asthma – A disease that affects people's lungs and makes it difficult to breath. Air pollution, allergens, heavy exercise, and certain weather conditions can trigger an asthma attack.

Vision Board Examples:



Comic Strip Template

