

An Introduction to Global Warming
for Students in Grades 6-8

Carbon footprint



Since the Industrial Revolution (from about 1850 to the present) an astounding amount of greenhouse gases have been introduced into the earth's atmosphere. This is primarily due to increased use of fossil fuels for generating power.

As Americans we are huge consumers of products that use enormous amounts of energy and generate huge amounts of waste.



A carbon footprint is the amount of carbon dioxide that a person, family or business emits through the use of fossil fuels.



Your carbon footprint is the impact your lifestyle choices have on the earth. Two of the biggest contributors are your driving and travel habits, and your electricity use at home. Other impacts come from your diet and the products you buy.



Have you stopped to consider your personal contribution to climate change?

Did you know that you send greenhouse gases into the atmosphere when you...

- watch TV
- play video games
- turn on a light
- ride in a car
- put trash in a landfill
- use electricity to listen to music



Global Warming

Some of the news you may have heard

Polar bears are losing their habitats

Sea level is rising

Hurricanes are getting bigger and stronger

Glaciers are melting fast

Temperatures are going up

How do we know?

Scientists have been able to study climate change by looking at tree cores, atmospheric composition, sediment cores, ice cores, and through observation.

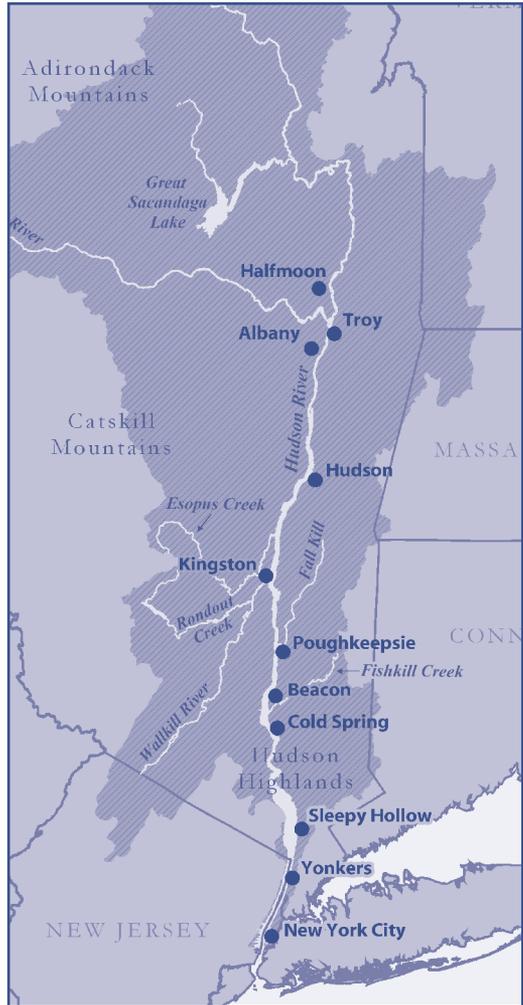
Impacts on the Hudson Valley

As temperatures increase around the world, weather patterns and seasons will change here in the valley. These changes in climate are already having troubling effects:

- higher temperatures
- more intense rain and floods
- less snow
- increased droughts
- increased cost of food
- poor air quality
- loss of forests and wetlands
- sea-level rises (remember, the Hudson River is connected to the Atlantic Ocean)

Does this affect you?

Use the resources provided in this booklet to further investigate.



Josh Clague (map & Black Creek photo)

Hudson River Watershed Map

*Information from the Hudson River Estuary Program at: www.dec.ny.gov/ and the Union of Concerned Scientists: www.climatechoices.org

FOCUS ON PLANT AND ANIMAL IMPACTS

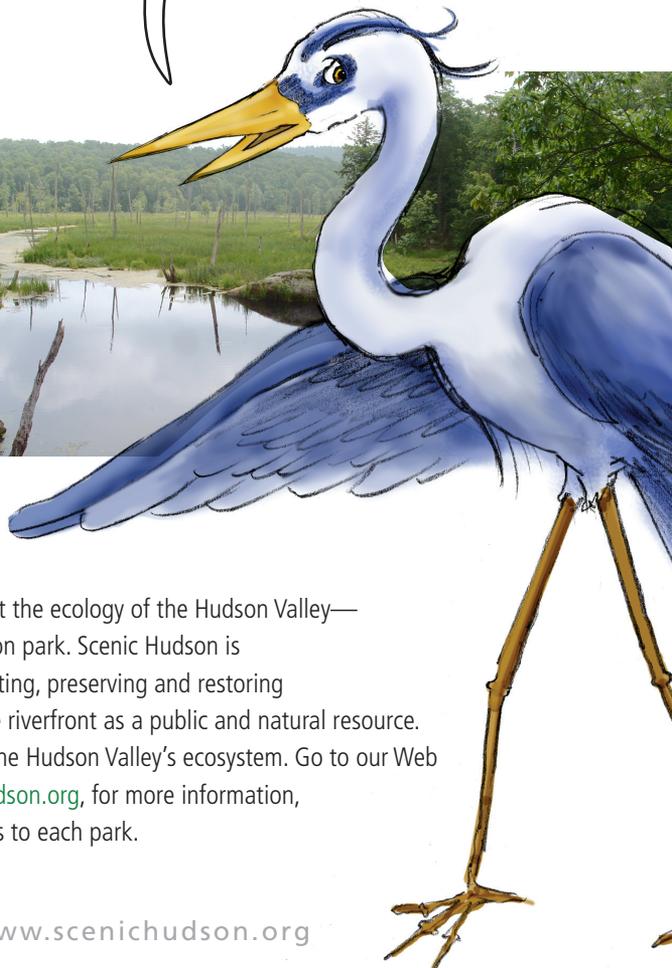
As the climate changes in the Hudson Valley, species in our very own backyard will be affected.

Impacts might be: loss of habitat, loss of native plants, changes in pollination, change in migration patterns, shifts in food availability for humans and wildlife, possible extinction.



THINK ABOUT THIS

How is the habitat of the polar bear affected by climate change? What species in the Hudson Valley will be affected by climate change?



To learn more about the ecology of the Hudson Valley— Visit a Scenic Hudson park. Scenic Hudson is dedicated to protecting, preserving and restoring the Hudson and the riverfront as a public and natural resource. Learn more about the Hudson Valley's ecosystem. Go to our Web site, www.scenichudson.org, for more information, maps and directions to each park.

“Every little thing counts!”

—Mia, sixth-grader

Be a part of the solution!

What you can do:

- Reduce, reuse, recycle!
- Bike or walk instead of driving
- Carpool with others to school
- Conserve water
- Get educated about taking care of the environment
- Use both sides of paper
- Organize a class project to teach others about climate change solutions
- Be energy efficient... Turn off lights, unplug electronics, use a power strip, unplug chargers (cell phone, iPods, etc.) when not in use
- Bring lunch in reusable containers

What your family can do:

- Reduce, reuse, recycle!
- Buy a hybrid car
- Use compact fluorescent light bulbs
- Go solar
- Walk instead of drive
- Buy local
- Shop at the farmers’ market
- Use less hot water
- Use products made from recycled paper
- Bring a reusable cloth bag to the store
- Plant a tree
- Cut down on products with excess packaging
- Hang laundry out to dry
- Compost



How will you challenge yourself to lower your impact?

To calculate your carbon footprint:

http://www.zerofootprintkids.com/kids_home.aspx

To test your green knowledge:

nationalzoo.si.edu/Publications/GreenTeam/GreenQuiz.cfm

To play the Consumer Consequences game:

sustainability.publicradio.org/consumerconsequences/



For information about energy facts and efficiency go to the Web site for students at the Energy Information Administration:

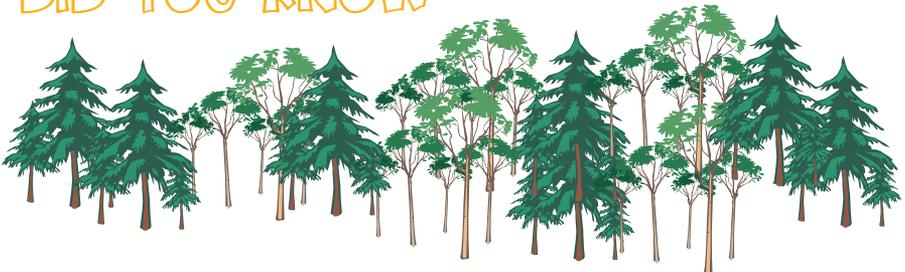
www.eia.doe.gov/kids/

One of Scenic Hudson's contributions is lowering the carbon footprint by...

Preserving FORESTS!

Trees, through photosynthesis, absorb and store carbon dioxide. They act as natural air filters. Trees help to control erosion and flooding.

DID YOU KNOW



1 tree consumes 1 ton of carbon dioxide during its lifetime!



OUR PLANET NEEDS YOUR HELP

OUR HUDSON VALLEY NEEDS YOUR HELP

Our planet is a complex ecosystem with dynamic interactions,
but we all breathe the same air and drink the same water.

The issue of climate change impacts your life no matter where
you are—and its up to all of you to be part
of the solution.

Everyone on earth
is affected.



Key Concepts

climate change—a term used to describe trends in the earth’s climate. For example, scientists see that the planet’s average temperature is rising. This affects wind and ocean currents, as well as yearly amounts of rain and snow. Climate change affects different parts of the world in different ways. Take a look at what is happening in the Arctic as compared to the Hudson Valley.

global warming—refers to the general increase in the earth’s average temperature, which causes changes in climate patterns across the globe. The earth’s average temperature has been increasing over the last century. For example, there is some evidence that suggests that the U.S. Northeast will be getting colder as the poles melt due to cold fresh water changing currents near the East Coast.

Keywords to explore and know: acidification, alternative energy, atmosphere, biomass, carbon cycle, carbon dioxide, carbon footprint, conservation, deforestation, ecosystems, energy, estuary, feedback loops, food web, fossil fuels, fuel efficiency, greenhouse effect, greenhouse gases, habitat, Industrial Revolution, invasive and native species, natural resources, ozone, photosynthesis, pollution, renewable and solar energy, species migration, symbiosis, systems thinking, watershed.

Look up key events in American environmental history—for example, Earth Day, an environmental movement that was founded in 1970 when 20 million Americans protested for a healthy and sustainable environment. Earth Day represents the hope for a clean environment. Other examples are the Clean Air Act, Clean Water Act, Endangered Species Act, Kyoto Protocol, and the SCENIC HUDSON DECISION.

Resources

There are *many* resources available for more information on climate change and global warming. Here are a few:

FOR STUDENTS

On the Web:

Environmental Protection Agency,
www.epa.gov/climatechange/kids/

National Oceanic and Atmospheric
Administration (NOAA)
For grades 6-12
[www.ncdc.noaa.gov/oa/climate/
globalwarming.html](http://www.ncdc.noaa.gov/oa/climate/globalwarming.html)

OneClimate.net, offers links to other climate
change sites
[tiki.oneworld.net/global_warming/climate_
home.html](http://tiki.oneworld.net/global_warming/climate_home.html)

Nature Conservancy
www.nature.org/initiatives/climatechange

Books:

Dr Art's Guide to Planet Earth,
Art Sussman, Ph.D.

*An Inconvenient Truth: the Crisis of Global
Warming*. Adapted for a New Generation,
Al Gore

A Down-to-Earth Guide to Global Warming,
Laurie David and Cambria Gordon

*How Do We Know What We Know About
Our Changing Climate: Scientists and Kids
Explore Global Warming*, Lynne Cherry

*Fight Global Warming Now: The Handbook
for Taking Action in Your Community*, Bill
McKibben

*50 Simple Things Kids Can Do to Save the
Earth*, Andrews McMeel Publishing

The Solution is You! An Activists Guide,
Laurie Davie

FOR TEACHERS AND PARENTS

Union of Concerned Scientists
<http://www.climatechoices.org>

Nature Conservancy
[www.nature.org/initiatives/
climatechange/calculator](http://www.nature.org/initiatives/climatechange/calculator)

For curriculum:

EE Week
[www.eeweek.org/resources/
climate_curriculum.htm](http://www.eeweek.org/resources/climate_curriculum.htm)

Time for Kids
[www.timeforkids.com/TFK/
Teachers/minilessons](http://www.timeforkids.com/TFK/Teachers/minilessons)

Center for Environmental
Education
[www.ceeonline.org/
climatechange/tools/default.
cfm#climate19](http://www.ceeonline.org/climatechange/tools/default.cfm#climate19)

National Wildlife Federation
[online.nwf.org/
site/PageNavigator/
ClimateClassroom/cc_homepage](http://online.nwf.org/site/PageNavigator/ClimateClassroom/cc_homepage)

Earth Day Network
www.earthday.net

Global Warming Education
climatechangeeducation.org/

Zero Footprint Kids Calculator
For Teachers
[www.zerofootprintkids.com/
kids_teacher.aspx](http://www.zerofootprintkids.com/kids_teacher.aspx)

*Teaching about Climate Change:
Cool Schools Tackle Global
Warming*, edited by Tim Grant
and Gail Littlejohn

*Low Carbon Diet, A 30 Day
Program to Lose 5000 Pounds*,
David Gershon

YOUR CHOICES MATTER

The choices each of us make will
determine the extent of climate change.

Who's Scenic Hudson?

We are a group of dedicated people who care about the area we live in—the Hudson River Valley. Over 40 years ago, our founders fought to protect a mountain from being made into a power plant. Since then, we have continued to work together with towns like yours to protect special places and make them enjoyable for you to visit.



Scenic Hudson • One Civic Center Plaza, Suite 200
Poughkeepsie, NY 12601
845 473 4440 • www.scenichudson.org

Created and written by Susan Hereth, designed by Seth Martel, both
are Scenic Hudson staff members. (Dec. 2007)

Funding for online distribution provided by Central Hudson:



www.scenichudson.org