



Basics of Conservation

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Biodiversity Conservation

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Threats to biodiversity



H- Habitat Destruction/Degradation

I- Invasive Species

P- Population Growth

P- Pollution

C- Climate Change

O- Overexploitation (hunting and fishing)

H

I

P

P

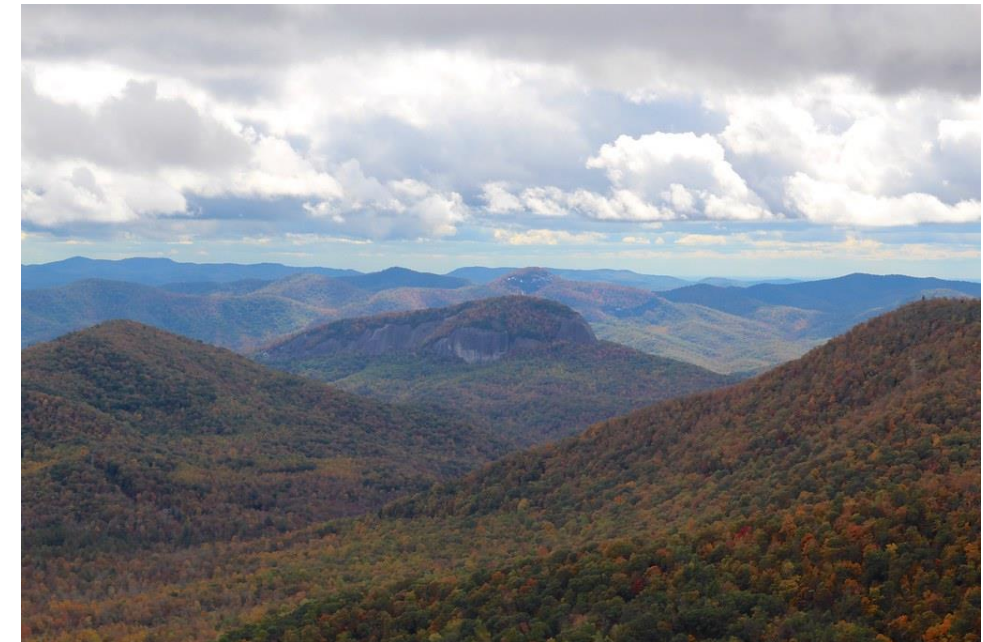
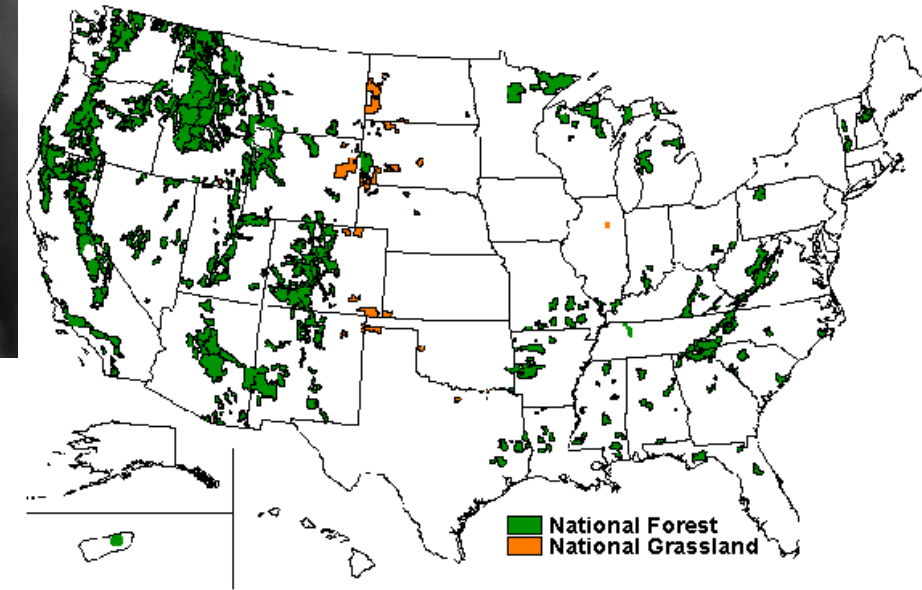
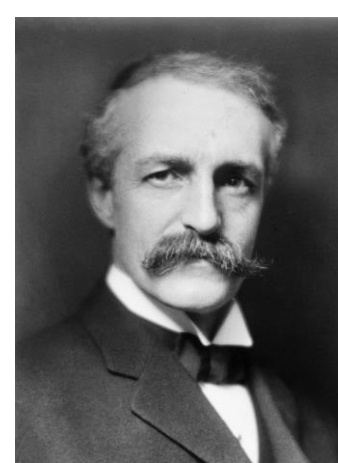
C

O



U.S. Forest Service

- The U.S. Forest Service was established in 1905 to manage natural resources “for the greatest good, for the greatest number, for the longest time”.
- USFS manages 193 million acres through fire, grazing, timber harvesting, habitat restoration, headwater protection, wilderness areas, and wild and scenic rivers.
- USFS’ “ecosystem management” approach works to sustain timber, wildlife, water and recreation resources.



Endangered Species Act - 1973

- Passed in 1973, the goal of the act is to identify and protect threatened and endangered species, and the ecosystems they depend on.
- Listed species can be plants or animals.
- Protected species are not allowed to be shot, harassed, wounded, harmed, pursued or collected.
- Protected species also have a recovery plan.
- US-1,666 species protected
International- 2,361 species protected



ESA in NC

- Approximately 60 federally threatened or endangered species (including plants) occur in NC. [Find the list here.](#)
- NC Wildlife Resources Commission uses the [Wildlife Action Plan](#) to plan conservation for wildlife and their habitats in the state.
- There are 64 endangered species, 51 threatened species and 129 species of special concern in NC. The [list](#) of these species can be found on NCWRC's website.



Effects of ESA

- The effectiveness of ESA has been debated; it is hard to measure since recovery can take decades and is complex.
- According to the [FWS](#), 98% of species listed are still surviving.
- As of 2013, 27 species had been fully recovered. 29 species were eligible to be upgraded to threatened with another 30 species that may soon be ready to delist.
- The Center for Biological Diversity published a [report](#) on the success of the ESA in 2012.

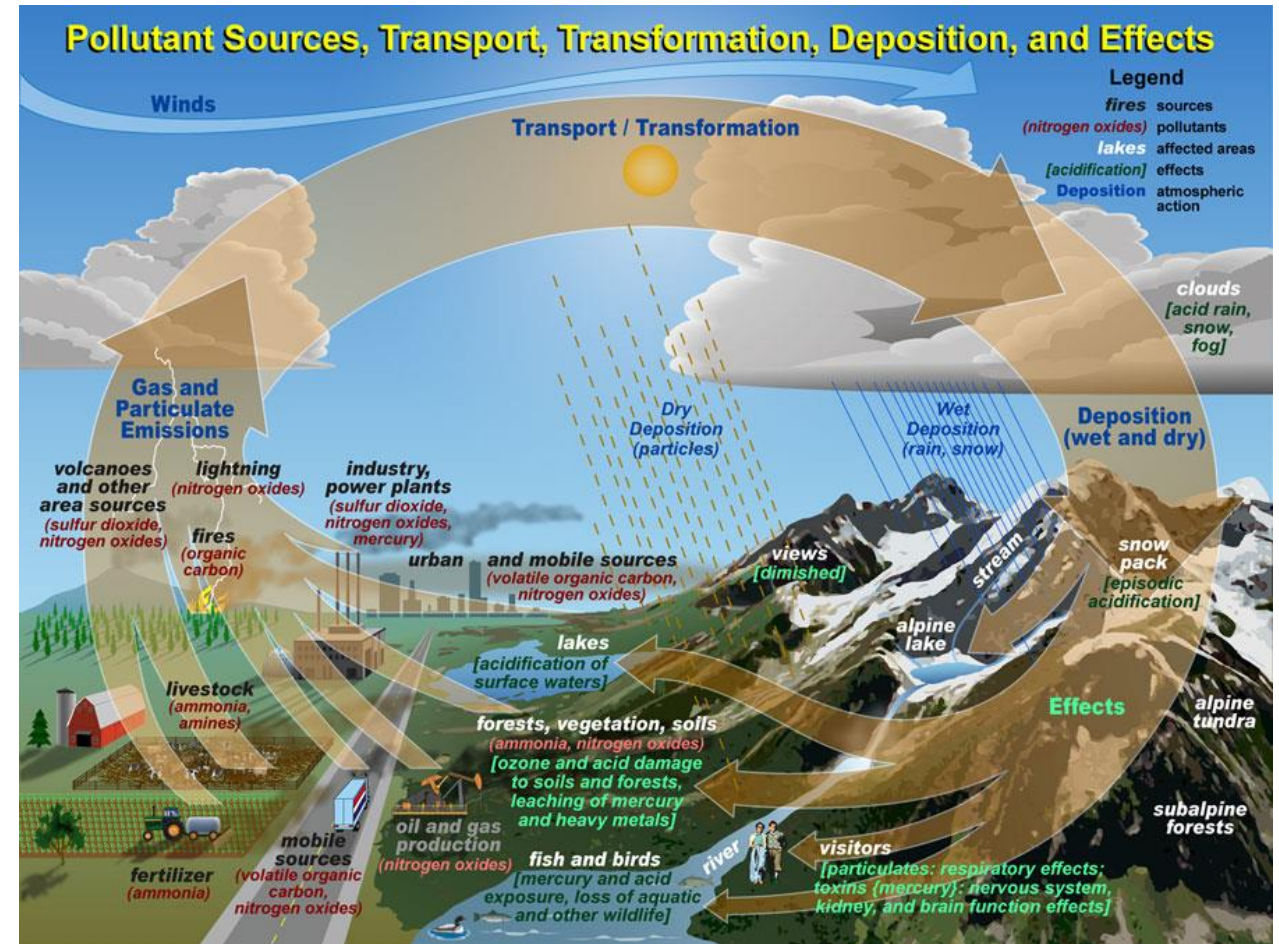


Air Conservation

Types of Air Pollution

- Ground-level ozone
- Lead
- Particles
- Carbon monoxide
- Nitrogen dioxide
- Sulfur dioxide
- Volatile organic compounds (VOCs)

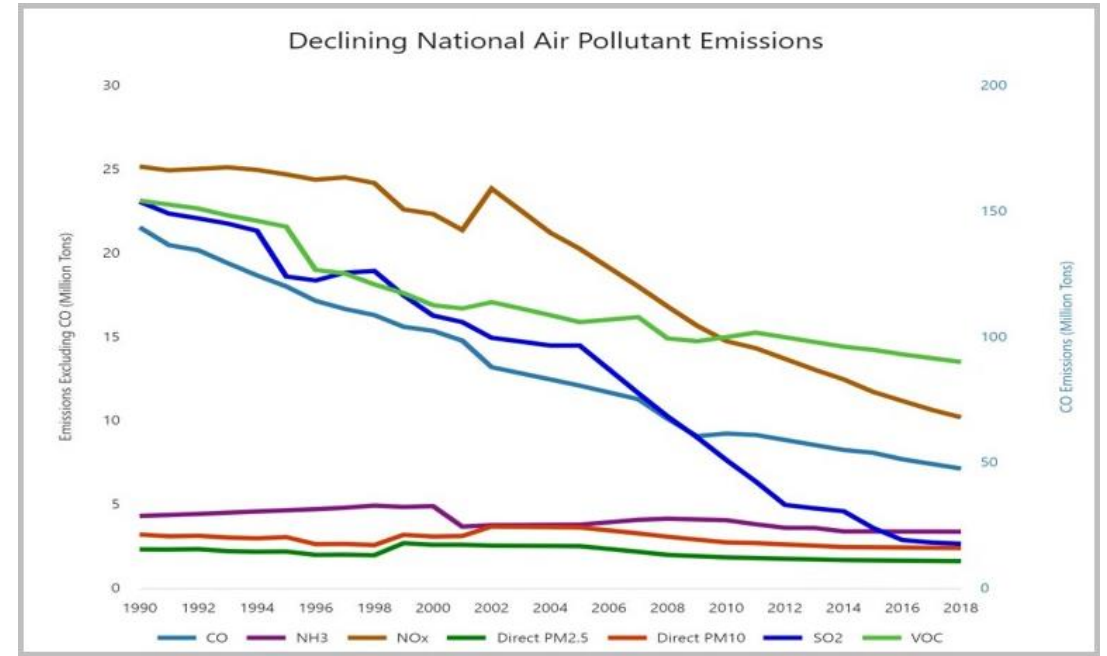
Check the quality of air in your area at [AirNow](https://www.airnow.gov/).



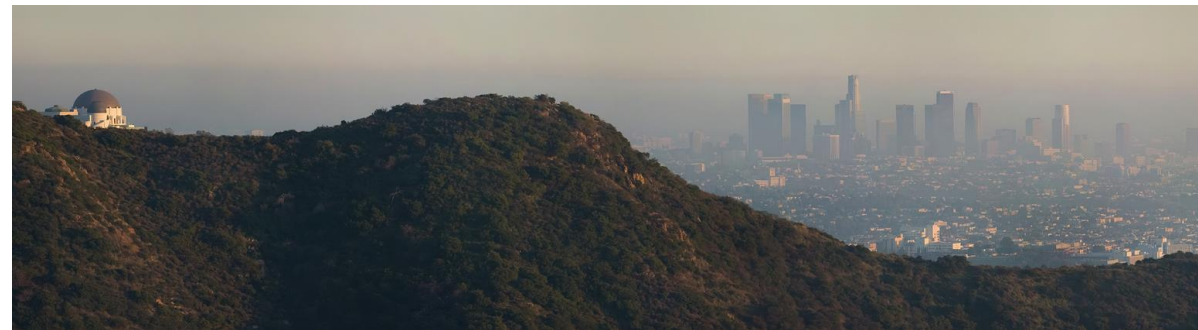
Source: <https://www.fws.gov/refuges/AirQuality/sources.html>

Clean Air Act- 1970

- This was the first federal legislation regarding air pollution control. It led to research on techniques for controlling and monitoring air pollution and quality.
- The act regulates emissions from stationary and mobile sources.
- According to the [EPA](#), the act has prevented 237,380 premature deaths, 75,000 cases of chronic bronchitis and 17 million lost work days in 2020 alone.
- Emissions of air pollutants have decreased 50% since 1990.

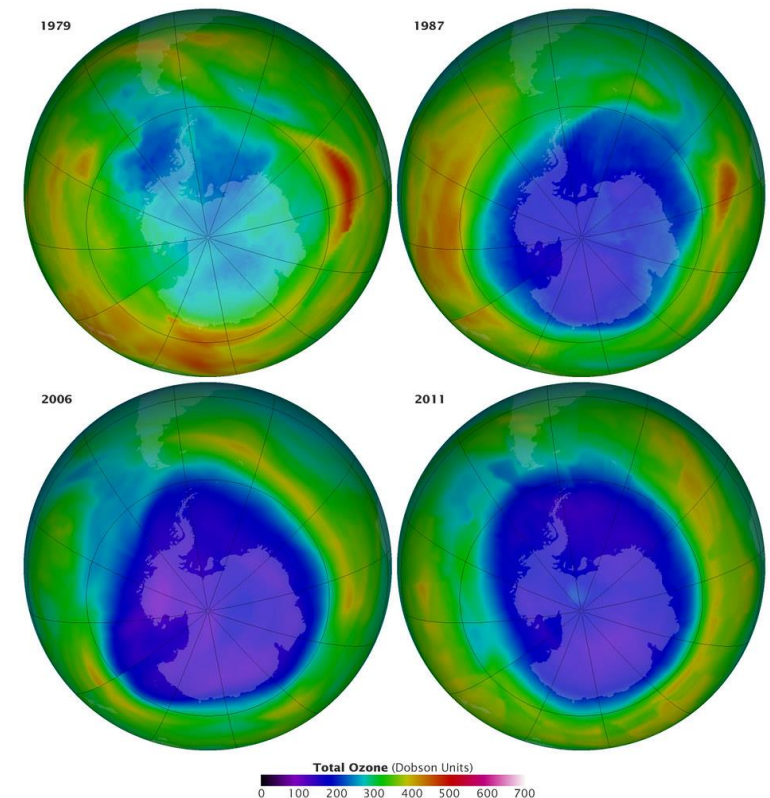


[Our Nation's Air](#)



Montreal Protocol - 1987

- The Montreal Protocol was a global agreement to help protect the ozone layer by phasing out products that damage it.
- This is the first treaty to achieve universal ratification by all countries in the world.
- According to the [UN](#), 98% of ozone-depleting substances have been phased out and 2 million skin cancer deaths have been prevented each year.

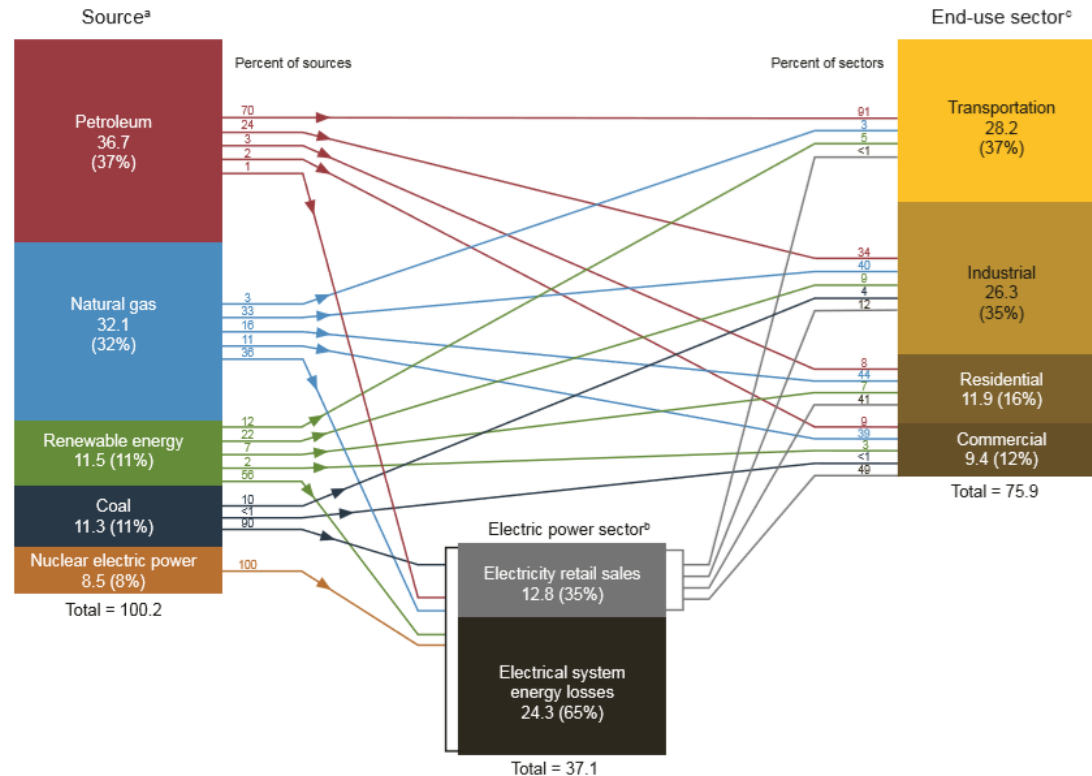


Energy Conservation

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Energy in America and the Greenhouse Effect

U.S. energy consumption by source and sector, 2019
(Quadrillion Btu)



^a Primary energy consumption. Each energy source is measured in different physical units and converted to common British thermal units (Btu). See U.S. Energy Information Administration (EIA), *Monthly Energy Review*, Appendix A. Noncombustible renewable energy sources are converted to Btu using the "Fossil Fuel Equivalency Approach", see EIA's *Monthly Energy Review*, Appendix E.

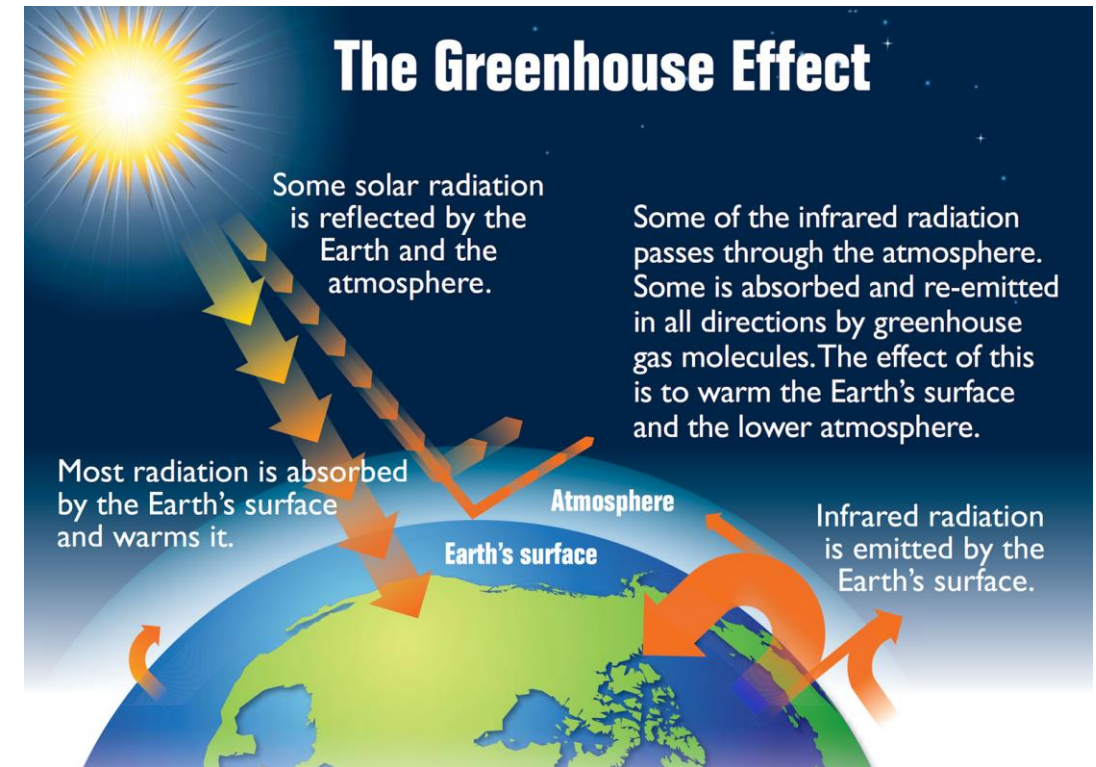
^b The electric power sector includes electricity-only and combined-heat-and-power (CHP) plants whose primary business is to sell electricity, or electricity and heat, to the public. Energy consumed by these plants reflects the approximate heat rates for electricity in EIA's *Monthly Energy Review*, Appendix A. The total includes the heat content of electricity net imports, not shown separately. Electrical system energy losses are calculated as the primary energy consumed by the electric power sector minus the heat

content of electricity retail sales. See Note 1, "Electrical System Energy Losses," at the end of EIA's *Monthly Energy Review*, Section 2.

^c End-use sector consumption of primary energy and electricity retail sales, excluding electrical system energy losses from electricity retail sales. Industrial and commercial sectors consumption includes primary energy consumption by combined-heat-and-power (CHP) and electricity-only plants contained within the sector.

Note: Sum of components may not equal total due to independent rounding. All source and end-use sector consumption data include other energy losses from energy use, transformation, and distribution not separately identified. See "Extended Chart Notes" on next page.

Sources: EIA, *Monthly Energy Review* (April 2020), Tables 1.3 and 2.1-2.6.



Source: [U.S. Energy Information Administration](https://www.eia.gov)

Clean Energy

- “Clean energy” includes utilizing more renewable energy sources and energy efficiency.
- According to the [State and Local Energy Efficiency Action Network](#), nearly $\frac{1}{3}$ of energy used in America each year is wasted.
 - Leaking heat or AC
 - Inefficient appliances and equipment
 - Insufficient practices
- Individual actions and large scale practices make a difference.



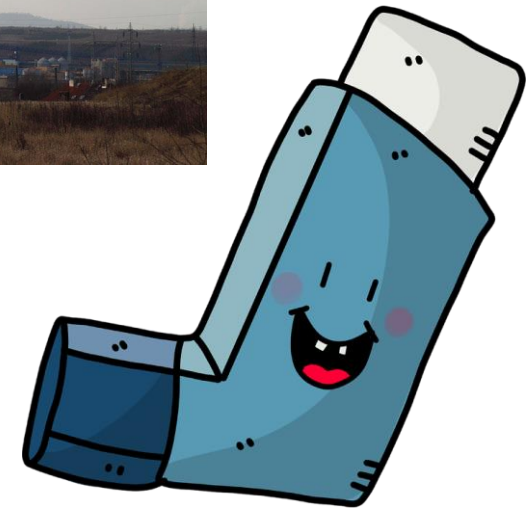
Kyoto Protocol - 1997

- The Kyoto Protocol was adopted in 1997 and entered into force in 2005. The U.S. dropped out in 2001.
- The Kyoto Protocol is the United Nations' treaty to reduce 6 different greenhouse gas emissions from developed countries. Developing countries (including China and India were not required to participate).
- 192 nations originally adopted the Protocol with a target of reducing emissions by 5% of their 1990 level from 2008-2012.
- The Doha Amendment was adopted in 2012 to extend the Protocol. It has not been ratified as of 2020, but 30 developed countries have deposited their instrument of acceptance.



Clean Power Plan - 2015-2017

- Originally unveiled by President Obama in 2015, this plan set the first standards and limitations of carbon pollution coming from major U.S. power plants.
- The bill aimed to cut carbon emissions from power plants by 32% of 2005 levels by 2030 and double solar and wind power capacity.
- The CPP was reviewed in 2017 and officially repealed in 2019 citing that it overreached the EPA's authority.



Conservation and the Individual

In the chat box, share some ways that you conserve natural resources. Please share any resources that could be useful to your peers regarding conservation.

Consumer Choices

- Every day there are choices a consumer can make that affect conservation; being conscious can have a major effect on conservation success.
- The following consumer choices can have effects:
 - Transportation
 - Diet
 - Shopping habits
 - Energy Use
 - Land Use
 - Cleaning products
 - Clothing
 - Electronics

Conscious Choices

- When purchasing products, look to see what is in the product and who produced/manufactured it. Doing so can reveal negative impacts on the environment and people.
- Example:
 - Palm oil is a vegetable oil that comes from the fruit of palm trees. It is a cheap, versatile oil that is used in household products from pizza and doughnuts to toothpaste.
 - Clearing biologically diverse forests to plant palm oil is one of the world's leading deforestation drivers.
 - What can you do? Use products without palm oil or with RSPO (Roundtable of Sustainable Palm



Reduce, Reuse, Recycle

- Reduce, reuse and recycle are strategies that are applicable in every consumer's daily life.
 - Reduce - Using/buying less of a product
 - Reuse - Using a product more than once instead of disposing of it
 - Recycle- Taking certain objects to a recycling center to be repurposed.
- Reduce and reuse are the most preferred methods for conservation.
- When recycling, **look up the object to ensure it can be recycled to avoid contaminating other recyclables.**
- [Asheville Waste Wizard](#)



Composting

- Composting is the controlled decomposition of yard and food waste that produces a soil-like substance.
- For hot composting, you will need a minimum 3 x 3 x 3 container, aeration and mixing.
 - The heat produced will kill weed seeds and disease.
- Composting is a great way to recycle organic material and produce fertilizer for you to use in your yard.
- To learn more, check out your local [Cooperative Extension](#) office.



Backyard Conservation

Consider incorporating one of the following in your backyard:

- Rain gardens: rain gardens typically consist of native plants and are planted in a drainage/low elevation area of your yard. These gardens reduce runoff and pollution.
- Pollinator gardens: plant native plants to attract native pollinators. Your local Cooperative Extension office is a great resource for learning about native pollinators and plants that attract them.
- Certified wildlife habitats: Create a wildlife habitat in your backyard by providing water, food, cover and areas to raise young. [NRCS](#) and the [National Wildlife Federation](#) have excellent resources for accomplishing this.
- Plant trees: Trees are excellent for reducing runoff, preventing flooding, providing habitat and sequestering carbon.



Sources

<https://www.epa.gov/>

<https://www.nrcs.usda.gov/>

Best Management Practices

<http://www.aascd.org/agriculture/best-management-practices/>

<https://extension.umn.edu/agroforestry/trees-shrubs-windbreaks#:~:text=Windbreaks%20are%20plantings%20of%20single,Wildlife%20habitat.>

Conservation in America

<https://www.earthday.org/>

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<https://www.aldoleopold.org/about/aldo-leopold/sand-county-almanac/>

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https://cfpub.epa.gov/watertrain/moduleFrame.cfm?parent_object_id=2571

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Biodiversity Conservation

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<https://www.unenvironment.org/>

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Energy Conservation

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Sources

Conservation and the Individual

<https://www.wwf.org.uk/updates/8-things-know-about-palm-oil#:~:text=Palm%20oil%20has%20been%20and,pygmy%20elephant%20and%20Sumatran%20rhino.>