

# Chapter 2

## Economics and

# Environmental Policy

Notes also at [kdecie.weebly.com](http://kdecie.weebly.com)



# Big Ideas Of Chapter 2

- How is sustainability affected by economics?
- How do environmental policies protect the environment?
- How can governments work together to form sound environmental policies?

Which car should you buy?



# Which light bulb is the best choice?



Incandescent Light Bulbs



Compact  
Flourescent  
Light Bulbs



LED  
Light  
Bulbs

How will planting this tree in my yard help?



If NJ is going to pay 1/3<sup>rd</sup> of the cost for solar panels on my roof is it worth it?



**Subsidy**  
provided by  
government  
as an  
**incentive**

How much extra would you be willing  
to pay?



For Strawberries that are organic and picked  
by farmers making a living wage?

# Section 1 Economics

Economics is the study of how resources are converted into goods and services and how these goods and services are used

- What is a good?  
(thing you buy)
- What is a service?  
(work done for you)



Warren Gretz/NREL

# What is economics?



Economics:

- Closely tied to decisions made about **needs and wants**
- What factors influence decisions between buyers and sellers?

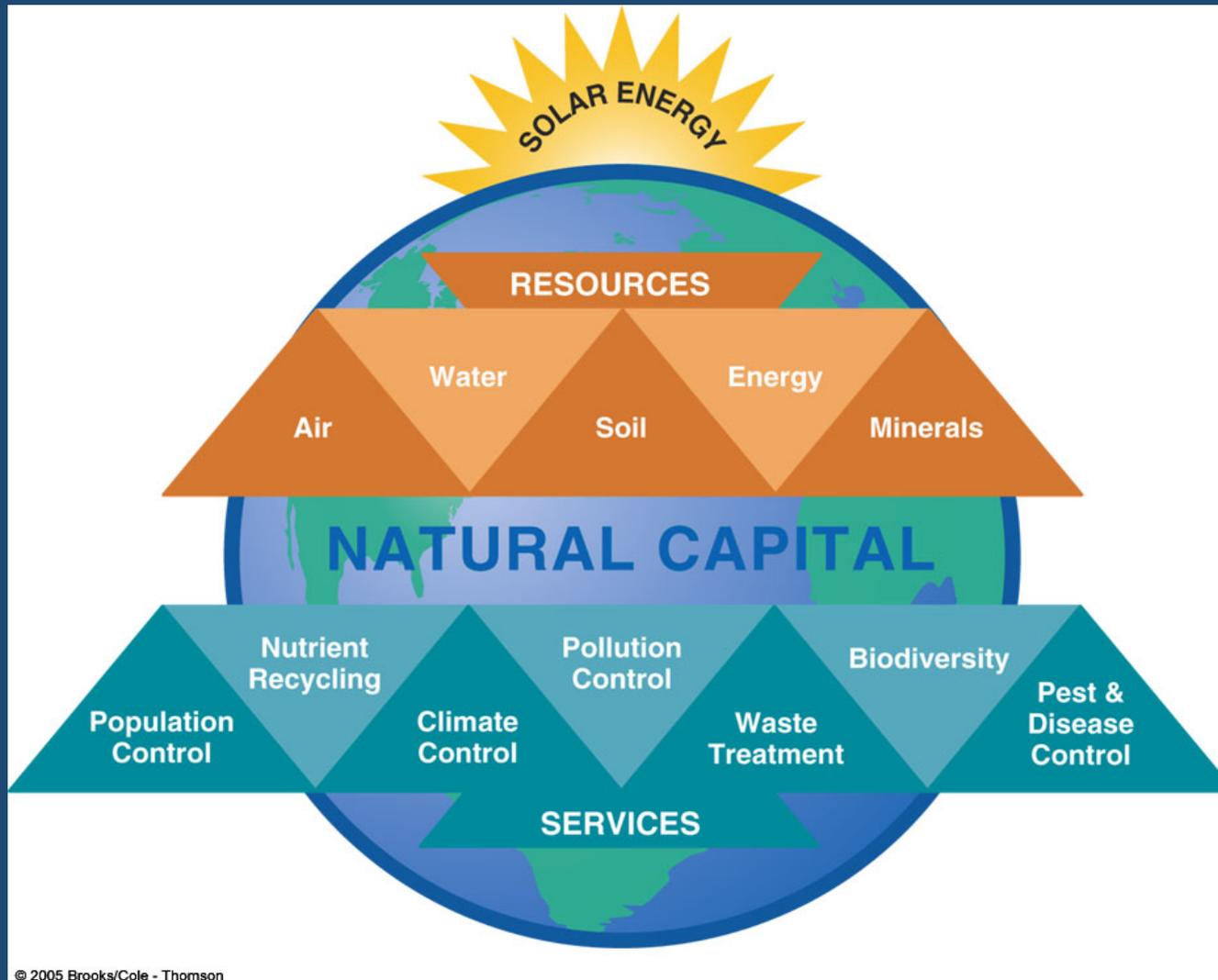
# What is the role of environment in economics?



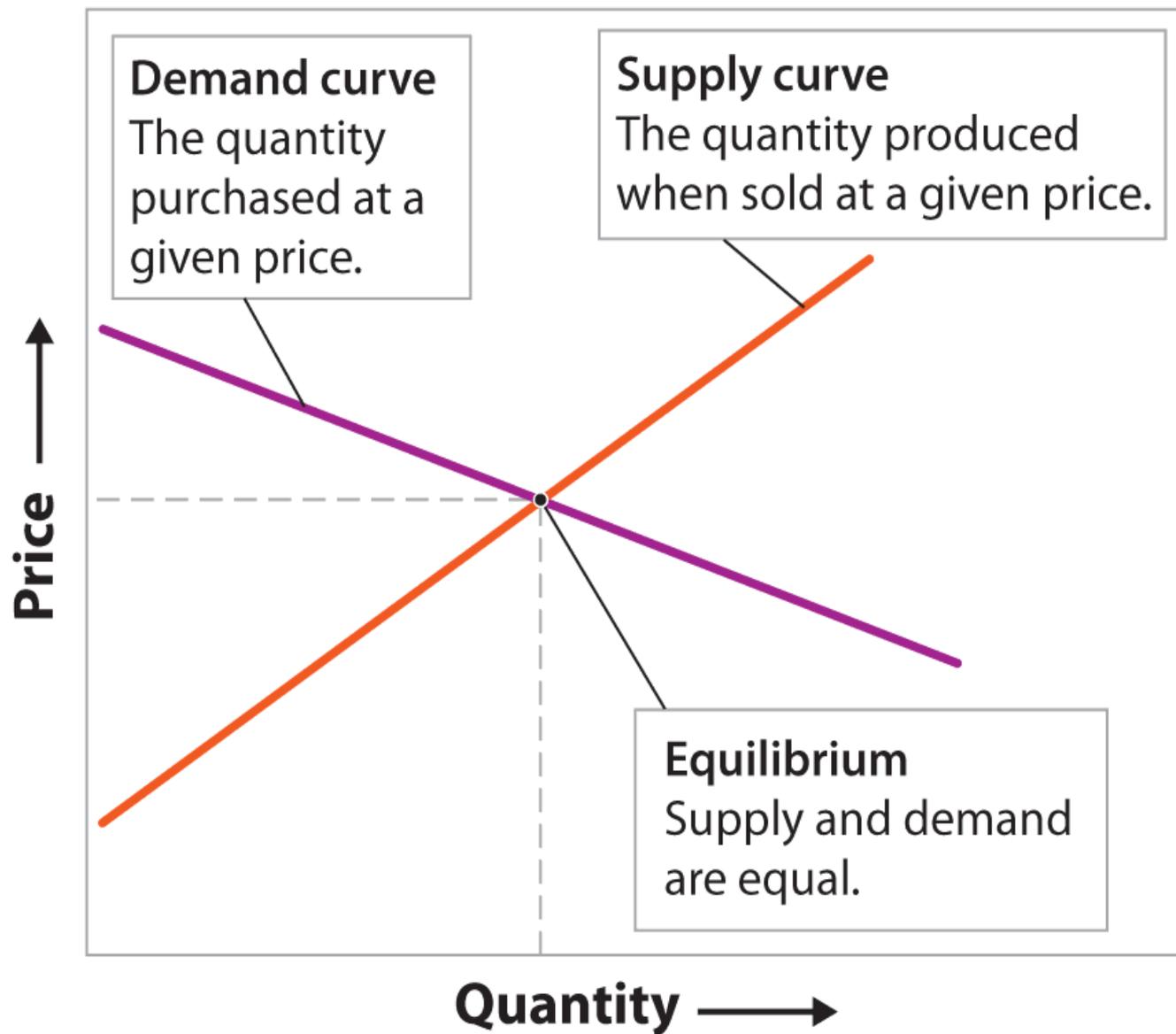
A 1997 study calculated the overall economic value of ecosystems worldwide at about \$33 trillion per year—more than the combined gross domestic product (GDP) of every nation in the world at the time.

- Can you name some “services” the environment provides our economy?

# Environmental Services



# Supply and Demand Curve



What would Apple do if at \$600 it sold quickly out of I pads?

What would Toyota do if at \$25,000 nobody was buying the Prius?

# Cost-Benefit Analysis

Comparing what will be gained and what will be sacrificed



What are the costs and benefits of:

- a) Putting solar panels on your roof?
- b) Better insulating your home?
- c) Buying an ice cream cone for desert?

Why are cost-benefit analysis controversial?

# Economics and Environment

- Economies depend on the environment for goods and services. (ecosystem services)
  - Goods: Sunlight, fresh water, timber, and fossil fuels
  - Services: Nutrient cycling and purification of air and water
- Economic activity can negatively affect the environment, which in turn can negatively affect economies. (Examples?)



# Economics and Environment

## PROBLEMS:

1) Costs and Benefits: Often only assume between buyer and seller

(who pays for the air pollution coming from your car, or the water pollution going down your toilet?)

- Called externalities

2) Short term effects: many environmental problems have long delays – future costs discounted



# Problems Continued

3) Endless resources:  
economics often  
assumes resources will  
not run out

4) Growth: growth is  
required to maintain  
social order.

- Can we grow forever?
- Will technology solve our problems?



# Economics and Sustainability

- Applies the principles of Earth's systems to economics
- Argues that economies cannot be sustainable unless environmental issues are addressed
- Assigns market values to ecosystem services



What is the value of the Grand Canyon?

# Types of Non-Market Values

- Aesthetic Value: how much is the beauty of the Grand Canyon worth?
- Cultural Value: how much are rock art painting from 800 years ago worth?
- Use value: how much would you pay to see a Redwood Tree?
- Scientific or Educational value



# Changing Consumer Values

Changing consumer values can drive corporations to pursue sustainability.

- Ecolabels
- Education

Based on standard U.S. Government tests

# ENERGYGUIDE

Instantaneous Water Heater  
Natural Gas  
Capacity (Max. GPM rating):  
3.6 Gallons/minute

Takagi Industrial Co., USA Inc.  
Model(s):  
T-K1

**Compare the Energy Use of this Water Heater with Others Before You Buy.**

<b>This Model Uses</b>	
<b>187 therms/year</b>	
	
<b>Energy use (therms/year) range of all similar models</b>	
<b>Uses Least Energy</b>	<b>Uses Most Energy</b>
<b>237</b>	<b>422</b>

Therms/year is a measure of energy use. Your utility company uses it to compute your bill. Only models with first hour rating over 131 gallons are used in this scale.

Natural gas water heaters that use fewer therms/year cost less to operate. This model's estimated yearly operating cost is:

**\$ 116**

Based on a 1998 U.S. Government national average cost of \$0.619 per therms for natural gas.

Important: Removal of this label before consumer purchase is a violation of Federal law (42 U.S.C. 6302).

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# Section 1 Review

Terms: economics, supply, demand, cost-benefit analysis, environmental economics, non-market values, ecolabing

1)What are often problems with our current economic system related to environmental problems?

2)List several “ecosystem services”

## Section 2: U.S. Environmental Policy

*How do environmental policies protect the environment?*



Basic Question: Why do we make laws?

The Homestead Act of 1862 allowed any citizen, for just \$16, to claim 65 hectares (160 acres) of public land, as long as they lived on it for five years and either built a house or cultivated the land.

Why would we have such a law?

Why not have the same law today?



Once upon a time...little or no need for  
environmental policy?



# Environmental Policy

A set of general plans and principles for interactions between humans and the environment

Effective environmental policy involves input from science, ethics, and economics.

- What is the role of science in policy? Ethics? Economics?

Tennessee Valley Infrastructure Group Inc./NREL



# U.S. As Model For World

Historically, U.S.  
has been a model  
for rest of the  
world



# Every Branch of U.S. Government

Legislative: aka Congress

Executive: White House,  
EPA, Forest Service, DOI

Judicial: Supreme  
Court

State and local  
governments



# State and local governments

- State and local environmental policies cannot violate the U.S. Constitution.
- The strength of environmental policy differs from state to state.
- Which states do you think are most “progressive” with environmental policy



# History of U.S. Enviro Policy: Early Years (Pre late 1800s)

Laws enacted during this period dealt primarily with management of public lands as the nation expanded west.

General feeling was that resources and land were in endless supply



# Late 1800s to Mid-1900s

Policies sought to reduce environmental problems associated with westward expansion.

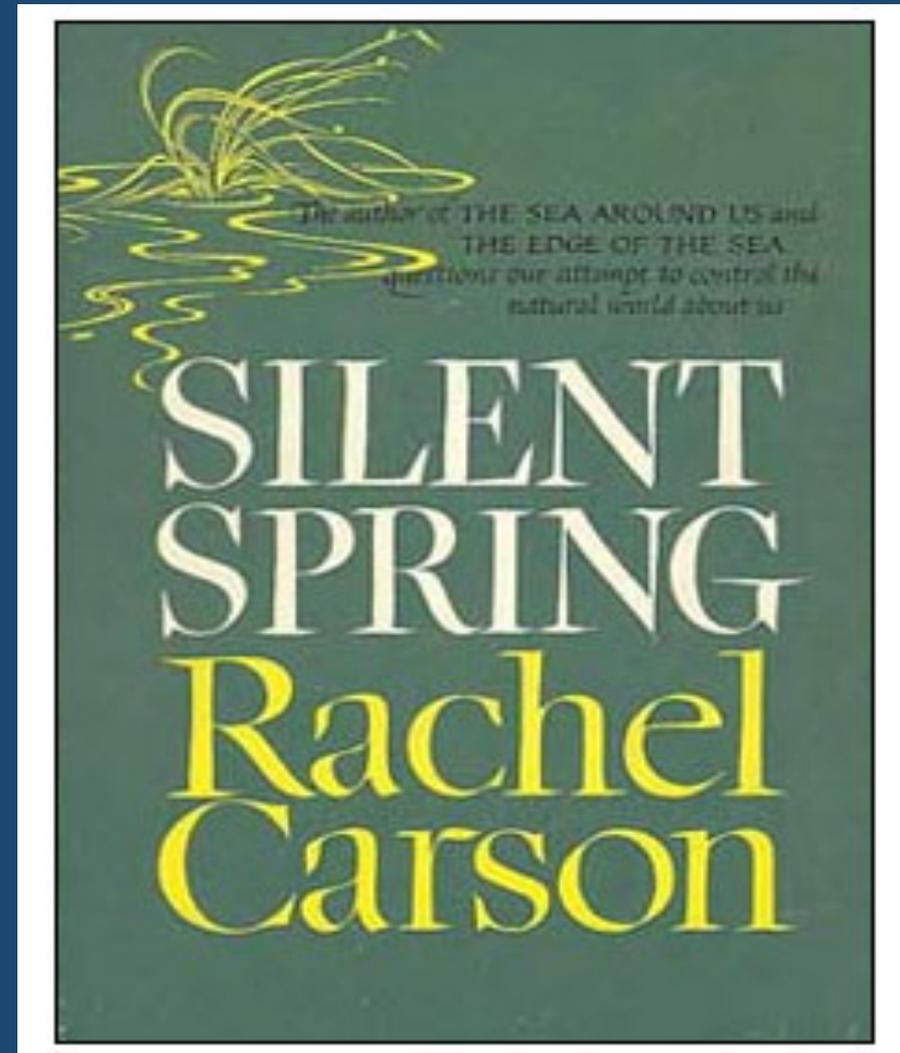
Led to the formation of national forest system and national park system

- 1964 Wilderness Act
- 1872 Yellowstone NP



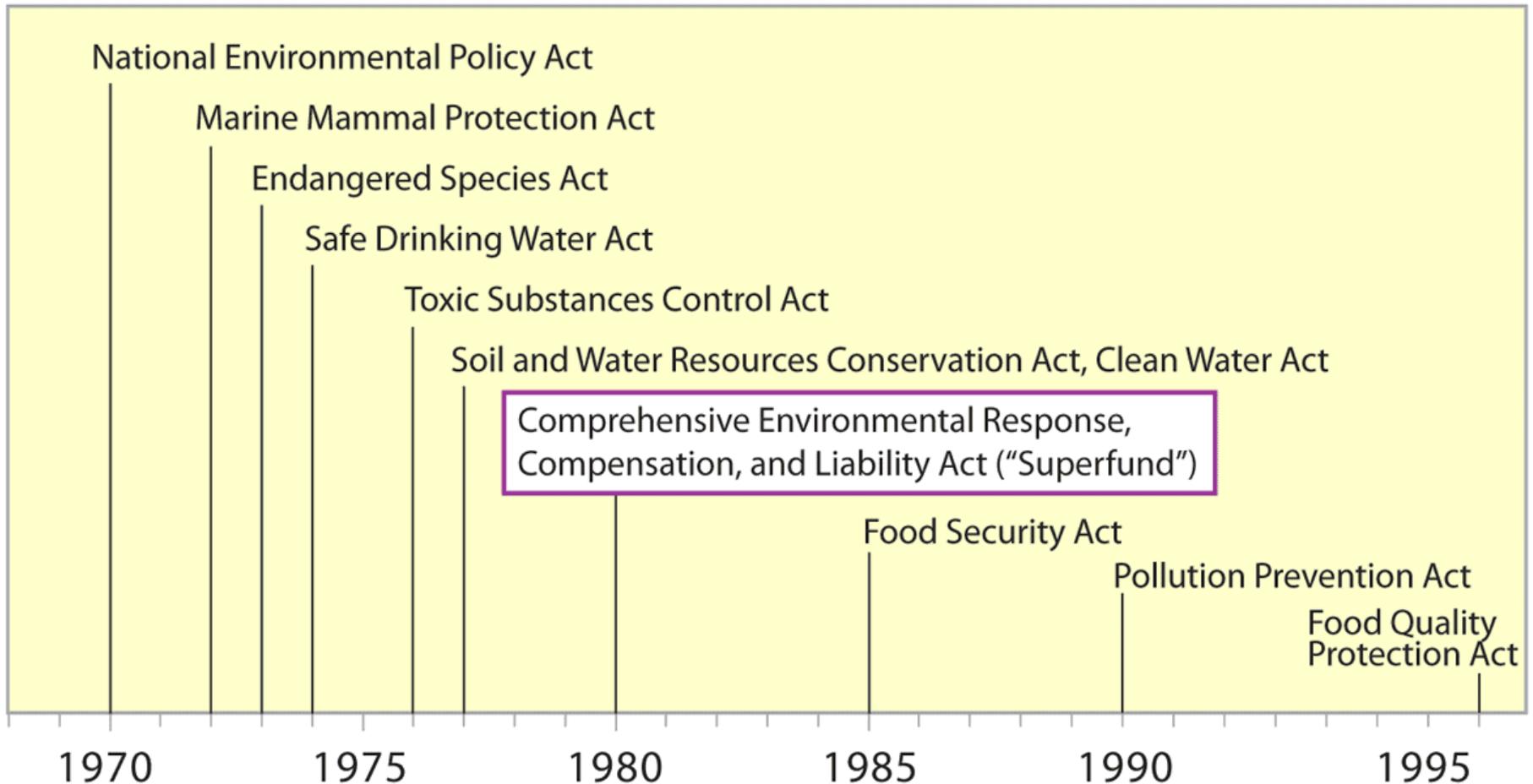
# Mid-to-Late 1900s (modern era)

- Dense populations led to increasing resource consumption and pollution.
- Silent Spring and fires on the Cuyahoga River raised environmental awareness.
- Policy began to reflect the connection between human and environmental health.



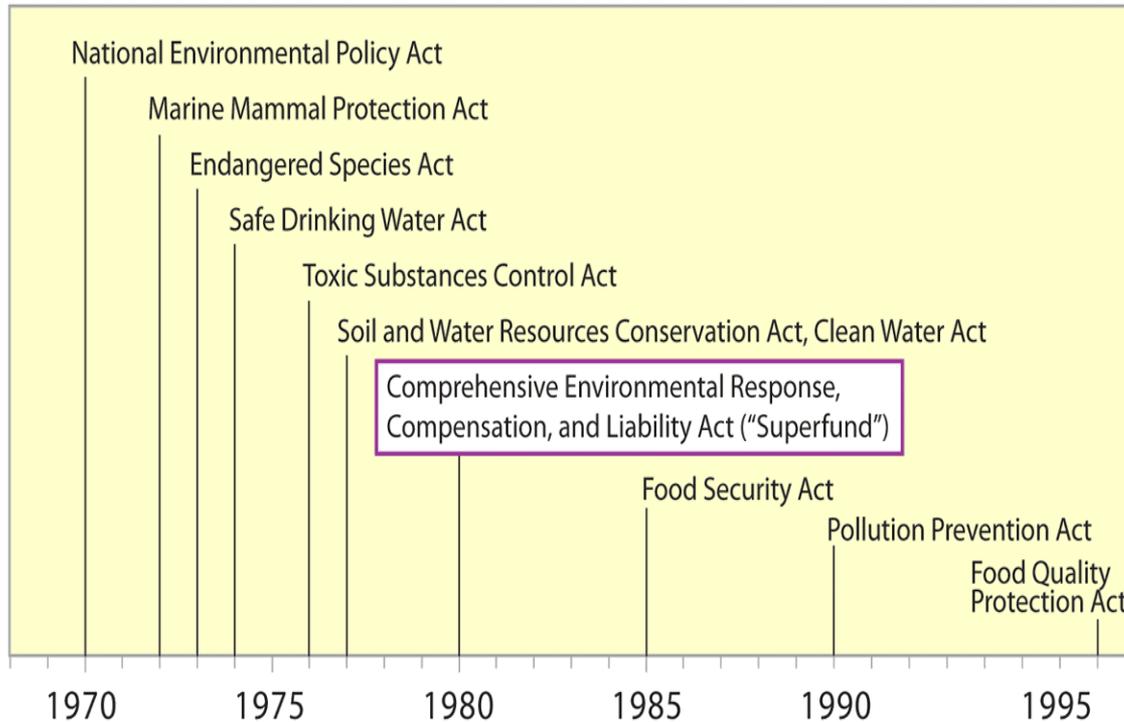
# Mid-to-Late 1900s (modern era)

## Key Environmental Protection Laws, 1970–1996



# Mid-to-Late 1900s (modern era)

Key Environmental Protection Laws, 1970–1996



- Late 1960s into  
1970s major  
laws passed:
- April 22, 1970 first Earth Day

# Modern Environmental Policy

1970: **EPA** formed

1970: **National Environmental Policy Act** (NEPA requires Environmental Impact Statements)

1972 and 77 **Clean Water Act**

1973 **Endangered Species Act**

1974 **Safe Drinking Water Act**



# More recently (1980s – today)

- No real new laws
- Political climate has changed
- 1980s backlash
- 1990s and today a political stalemate



# Section 2 Review

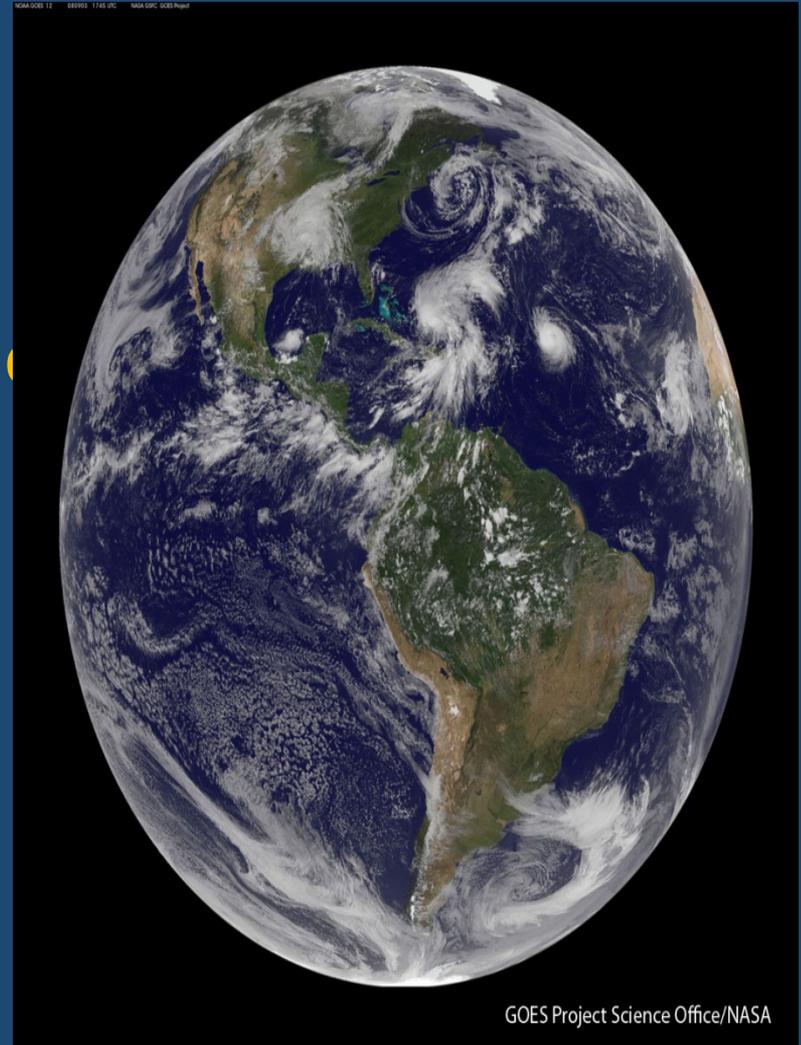
- 1) Why do we have environmental policies?
- 2) How have environmental policies in U.S. changed since the 1700s?
- 3) What role does each branch of government play in environmental policy?
- 4) List several important environmental policies discussed in class.

# Section 3 International Environmental Policy and Policy Approaches

*1) How can governments work together to form sound environmental policy?*

*2) What are different approaches used by governments to improve environmental quality?*

# Why do we need international agreements?



of the  
W  
and  
not

# What are international laws?

- Arise from multinational conventions or treaties
- Enforcement often difficult
- In U.S. which branch of government deals with treaties?



# International Laws

International organizations promote cooperation between nations:

- **The United Nations**
- The European Union
- The World Trade Organization
- The World Bank

**What do these organizations do?**



- The United Nations Environment Programme (UNEP) was established in 1972 with the mission of helping countries achieve sustainability.

# Approaches to Environmental Policy

*How Can we change behaviors?*

Command-and-Control:  
government sets rules  
and punishes for  
violations

- Common approach
- Can you think of a law like this?
- What may be downside to this approach?



National Ocean Service/NOAA

# Approaches to Environmental Policy

*How Can we change behaviors?*

## Tax Breaks and

Subsidies: government gives a tax break for actions it deems good

Subsidy: a giveaway by government to promote a certain behavior

- Can you think of any?
- Can you think of any problems?



# Approaches to Environmental Policy

*How Can we change behaviors?*

Green Taxes: taxes on companies that harm environment

Company X pays an extra tax depending upon how much they pollute the air or water

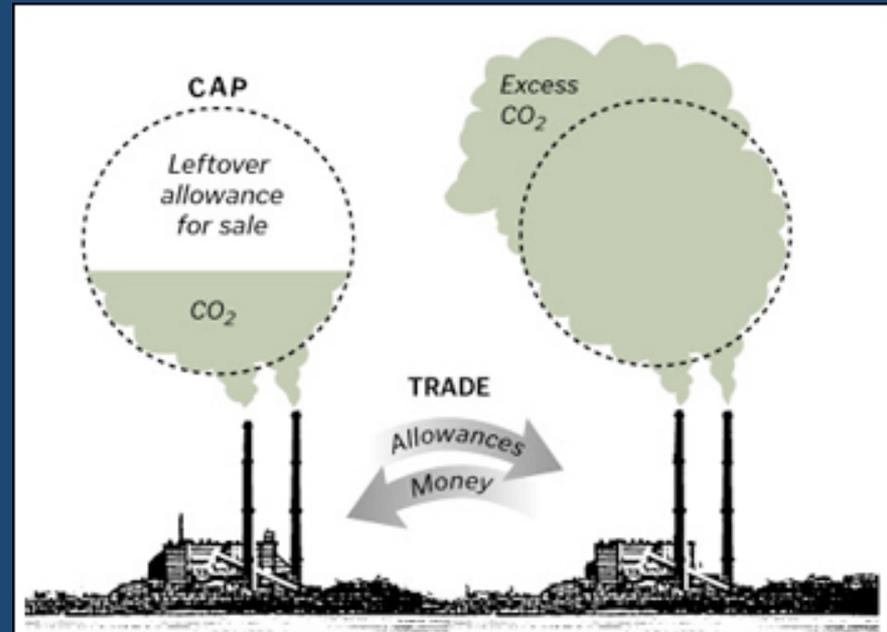


# Approaches to Environmental Policy

*How Can we change behaviors?*

Cap-and-Trade:  
government determines  
overall amount of pollution  
it accepts and issues  
permits to pollute a  
fraction of that amount

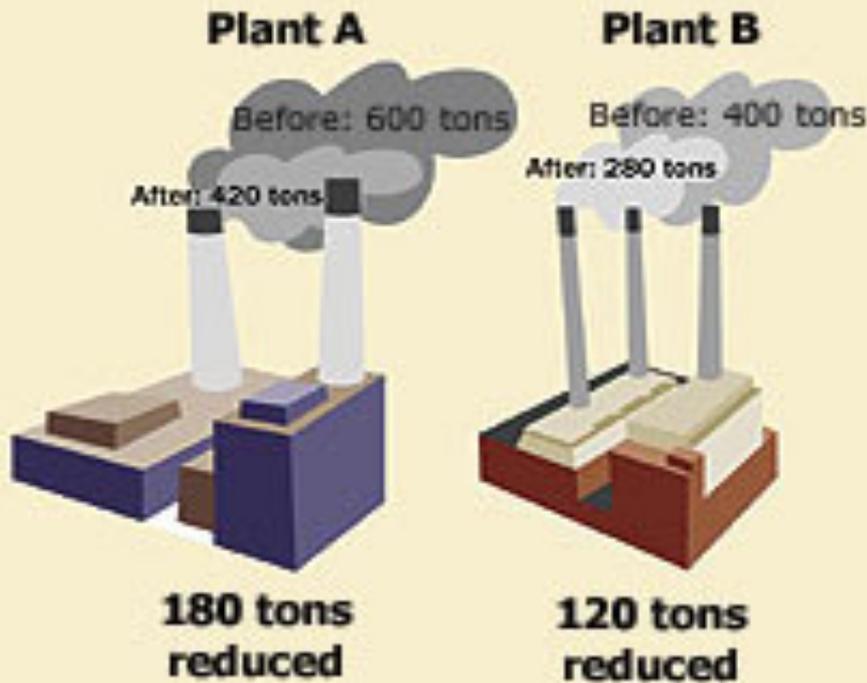
- Permits: bought, sold and traded in market
- Problems?



**Did You Know?** The cap-and-trade approach in the U.S. has helped reduce sulfur dioxide emissions that cause acid rain by 35%.

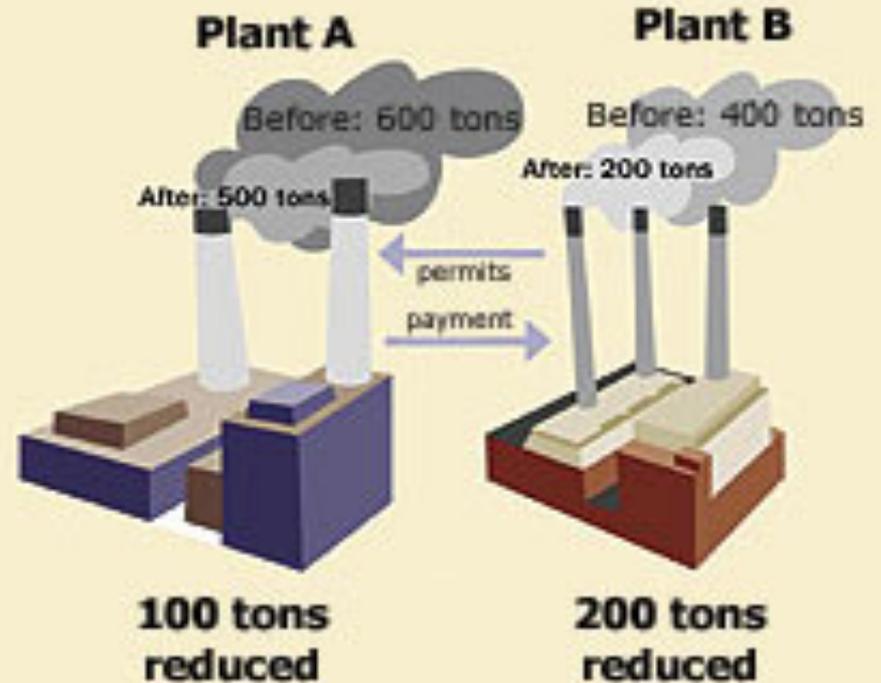
# Cap-and-trade

**Traditional Approach: 30% Mandatory Reduction**



**Total Emissions Reduced: 300 tons**  
**Cost to Reduce: \$12,000**

**Flexible Cap-and-Trade Approach**



**Total Emissions Reduced: 300 tons**  
**Cost to Reduce: \$9,000**

# Approaches to Environmental Policy

*How Can we change behaviors?*

Rebates: for buying environmentally friendlier products

- Heaters/ ac
- Hybrid vehicles
- Water saving toilets

Education:  
information can lead to changes



PHOTO: JUSTIN SULLIVAN/GETTY IMAGES

# Approaches to Environmental Policy

*How Can we change behaviors?*

Which approach do you think works best? WHY?

Command-and-control

Tax breaks and subsidies

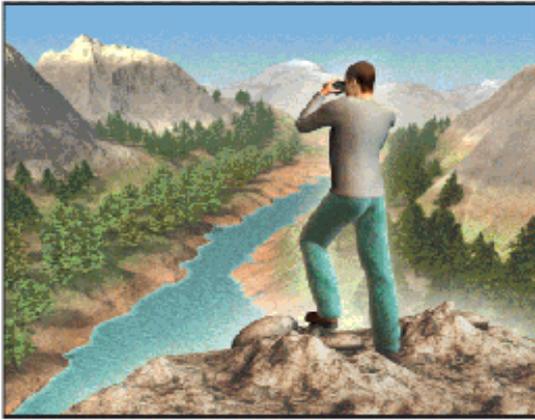
Green taxes

Cap-and-trade

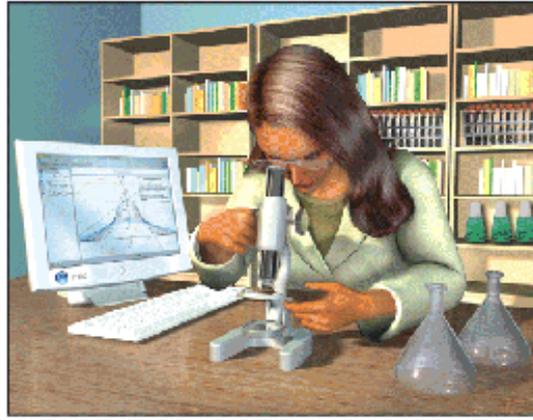
Local incentives



# Environmental Policy Process



**1** Identify the problem.



**2** Identify specific causes of the problem.



**3** Envision a solution and set goals.



**4** Get organized.



**5** Gain access to influential people.



**6** Manage drafting of bill and development of policy.

# Section 3 Review

- 1) How are international laws made?
- 2) What are some organizations that deal with international environmental laws?
- 3) Describe 3 types approaches to environmental policy.



Think about it: What impacts the decisions you make in life? Laws, Ethics, Economics???

Special thanks to Mr.Manskopf

