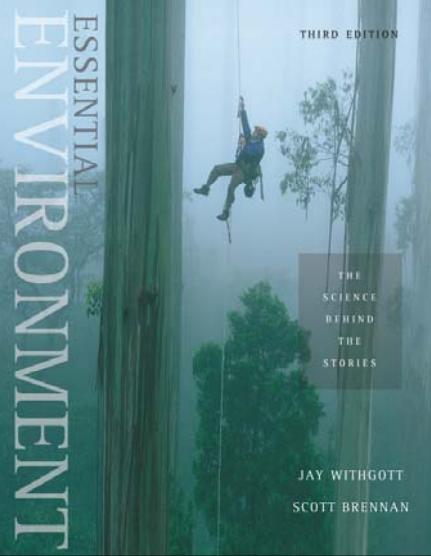


Chapter 2

Environmental Economics and Environmental Policy



Copyright © 2009 Benjamin Cummings is an imprint of Pearson

This lecture will help you understand:

- Principles of economic theory
- Economic growth, economic health, and sustainability
- Environmental and ecological economics
- Environmental policy
- The history of U.S. environmental policy
- The environmental policy process
- Different approaches to policy



Copyright © 2009 Pearson Education, Inc., publishing as Pearson Benjamin Cummings

Copyright © 2009 Benjamin Cummings is an imprint of Pearson

San Diego and Tijuana

- The Tijuana River empties into the Pacific Ocean, carrying millions of gallons of untreated wastewater.
- San Diego's waters receive storm water runoff.
 - Beaches are off-limits to swimming due to pollution from the Tijuana River.
- Rains wash pollutants onto U.S. and Mexican beaches, but things are worse on the Mexican side.
 - The problem has grown worse with increased population and pollution.
- People on both sides of the border have pressed policymakers to do something.

Copyright © 2009 Benjamin Cummings is an imprint of Pearson

Economics

- Economic and environmental concerns are intimately linked.
 - Environmental protection is good for the economy.
- **Economics** studies how people use resources to provide goods and services in the face of demand.
- Most environmental and economic problems are linked.
- Root "*oikos*" gave rise to both *ecology* and *economics*.

Copyright © 2009 Benjamin Cummings is an imprint of Pearson

Types of modern economies

- **Economy:** a social system that converts resources into...
 - **Goods:** manufactured materials that are bought, and
 - **Services:** work done for others as a form of business
- **Subsistence economy:** people get their daily needs directly from nature; they do not purchase or trade
- **Capitalist market economy:** buyers and sellers interact to determine production and distribution of goods and services
- **Centrally planned economy:** the government determines how to allocate resources
- **Mixed economy:** governments intervene to some extent

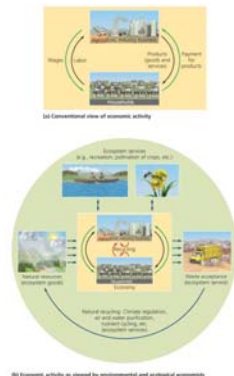
Copyright © 2009 Benjamin Cummings is an imprint of Pearson

Mixed economies

- **Mixed economy:** a hybrid economic system that combines capitalist market and centrally planned economies
- In modern mixed economies, governments intervene to:
 - Eliminate unfair advantages held by single buyers or sellers
 - Provide social services (national defense, medical care, education)
 - Provide “safety nets” for the elderly, victims of natural disasters
 - Manage the commons
 - Mitigate pollution

Copyright © 2009 Benjamin Cummings is an imprint of Pearson

The environment and economy are linked



- Economies receive inputs from the environment.
 - Process them for use
 - Discharge the wastes back into the environment
- Traditional economists ignore the environment.
 - Environmental economists accept that human economies exist within, and depend on, the environment.

Copyright © 2008 Pearson Education, Inc., publishing as Pearson Benjamin Cummings

Copyright © 2009 Benjamin Cummings is an imprint of Pearson

Ecosystem services have non-market values

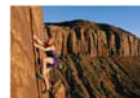
- **Non-market values** = values not included in the price of a good or service

TABLE 2.3 Values That Modern Market Economies Generally Do Not Address

Nonmarket value	Is the worth we ascribe to things . . .
Use value	that we use directly
Option value	that we do not use now but might use later
Aesthetic value	for their beauty or emotional appeal
Cultural value	that sustain or help define our culture
Scientific value	that may be the subject of scientific research
Educational value	that may teach us about ourselves and the world
Existence value	simply because they exist, even though we may never experience them directly (e.g., an endangered species in a far-off place)



(a) Existence values



(b) Use values



(c) Option values



(d) Aesthetic values



(e) Scientific values



(f) Cultural values



(g) Educational values

Copyright © 2009 Benjamin Cummings is an imprint of Pearson

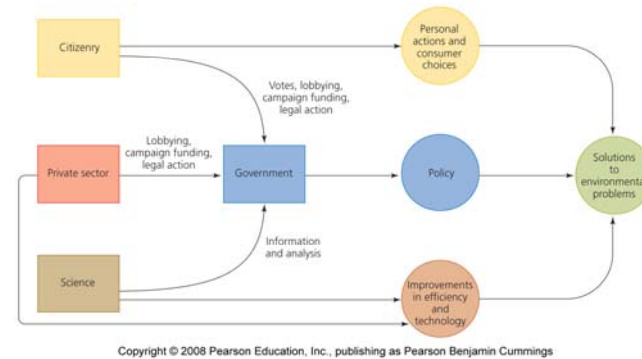
Environmental policy

- People persuade government leaders to solve a problem through the making of policy.
- **Policy:** a formal set of general plans and principles to address problems and guide decisions
- **Public policy:** policy made by governments that consists of laws, regulations, orders, incentives, and practices
- **Environmental policy:** pertains to human interactions with the environment
 - Regulates resource use or reduction of pollution
 - Promotes equity in resource use

Copyright © 2009 Benjamin Cummings is an imprint of Pearson

Environmental policy and resource use

- Policies include science, ethics, and economics.



Copyright © 2009 Benjamin Cummings is an imprint of Pearson

Environmental policy and equity

- The capitalist market economic systems of democracies are driven by incentives for short-term economic gain.
 - Not for long-term social and environmental stability
 - Provides little incentive to minimize environmental impacts

Environmental policy goals: protect environmental quality and natural resources and promote equity in people's resource use

Copyright © 2009 Benjamin Cummings is an imprint of Pearson

Environmental policy and resource use

- Environmental policies exist to protect resources from:
- **(1) The tragedy of the commons:** we must develop policies for commonly held resources
 - Restrict use and actively manage resources
 - Safeguard against exploitation and depletion
- **(2) Free riders:** reducing environmental impacts tempts any one person to cheat
 - Private voluntary efforts are less effective than efforts mandated by public policy
- **(3) External costs:** environmental policies promote fairness by preventing people from using resources in ways that harm others

Copyright © 2009 Benjamin Cummings is an imprint of Pearson

U.S. environmental policy

- The U.S. provides a good example of environmental policies.
 - The U.S. has pioneered innovative environmental policy.
 - U.S. policies have served as role models — of success and failure for other nations.
 - The U.S. influences other nations.
 - Understanding U.S. environmental policy helps us understand environmental policy at local, state, and international levels.

Copyright © 2009 Benjamin Cummings is an imprint of Pearson

Framework of U.S. policy: 3 branches

- 3 branches of the U.S. federal government (legislative, executive, and judicial) are involved in aspects of environmental policy:
 - Legislation (statutory law) is passed by Congress
 - Signed or vetoed by the president
 - Implemented and enforced by administrative agencies within the executive branch
- **Administrative agencies:** the “fourth branch”
 - Established by the president or Congress
 - Monitors compliance and enforces law
 - Issue **regulations:** specific rules based on statutory law

Copyright © 2009 Benjamin Cummings is an imprint of Pearson

State and local governments mirror federal policies

- The structure of the federal government is mirrored at the state level.
- State laws cannot violate principles of the U.S. Constitution.
 - If laws conflict, federal laws take precedence.
 - California, New York, and Massachusetts have strong environmental laws and well-funded environmental agencies.
 - The interior western states put less priority on environmental protection.

Copyright © 2009 Benjamin Cummings is an imprint of Pearson

Early U.S. environmental policy

- Involved management of public lands (1780s to the late 1800s)
 - Promoted settlement in the west
 - Extraction of natural resources
- Increased prosperity
- Relieved crowding in Eastern cities
- Displaced millions of Native Americans
- People believed that land was infinite and inexhaustible.



04 Settlers in Carter County, Nebraska, circa 1880
Copyright © 2009 Pearson Education, Inc.



03 Homestead claims being surveyed, San Francisco, 1850s
Copyright © 2009 Pearson Education, Inc.



02 Loggers felling an old-growth tree, Washington
Copyright © 2009 Pearson Education, Inc.

Copyright © 2009 Benjamin Cummings is an imprint of Pearson

The second wave of U.S. policy

- During the late 1800s: addressed environmental problems/impacts caused by westward expansion
- Public perception and government policy shifted.
 - Yellowstone National Park, the world's first national park, opened in 1872.
- Other protected areas were created.
 - National wildlife refuges, parks, and forests
- Reflected a new understanding that the West's resources were exhaustible and required legal protection
 - Soil conservation after the 1930s Dust Bowl
 - 1964's Wilderness Act: "where man is but a visitor"

Copyright © 2009 Benjamin Cummings is an imprint of Pearson

The third wave of U. S. environmental policy

- Responded to pollution
- Mid-to-late 20th century
 - Better off economically
 - But dirtier air, dirtier water, waste, and toxic chemicals
- Increased awareness of environmental problems shifted public priorities and policy.
- 1962: *Silent Spring* (by Rachel Carson) described the negative ecological and health effects of pesticides and industrial chemicals



Copyright © 2009 Benjamin Cummings is an imprint of Pearson

Modern U.S. environmental policy



- The Cuyahoga River (in Ohio) was polluted with oil and industrial waste.
 - It caught fire in the 1950s and 1960s.
- Today, public enthusiasm for environmental protection remains strong.
 - The majority of Americans favor environmental protection.
 - Each April, millions of people celebrate Earth Day.

Copyright © 2009 Benjamin Cummings is an imprint of Pearson



(b) Schoolchildren celebrating Earth Day, Kathmandu, Nepal, 2002

National Environmental Policy Act (NEPA)

- 1970: The dawn of the modern era of environmental policy
- The **National Environmental Policy Act** (1970) (NEPA), signed into law by President Nixon:
 - Created the Council on Environmental Quality
 - Requires an Environmental Impact Statement (EIS) for any Federal action that might impact the environment
 - NEPA forces the government and businesses to evaluate the environmental impacts of a project.

Copyright © 2009 Benjamin Cummings is an imprint of Pearson

The EPA shifts environmental policy

- In 1970, Nixon created the Environmental Protection Agency (EPA) by Executive Order.
 - An integrated approach to environmental policy
 - Conducts and evaluates research
 - Monitors environmental quality
 - Sets and enforces standards for pollution levels
 - Assists states in meeting standards and goals
 - Educates the public
 - Involves water and air quality, pollution, solid waste

Copyright © 2009 Benjamin Cummings is an imprint of Pearson

Significant environmental laws



- The public demanded a cleaner environment and supported tougher environmental legislation.

Copyright © 2009 Benjamin Cummings is an imprint of Pearson

The social context for policy can change

- Three factors allowed major advances in environmental policy in the 1960s and 1970s:
 - Wide evidence of environmental problems
 - People could visualize policies to deal with problems
 - Public support and leaders who were willing to act
- Starting in the 1980s, the political climate changed.
 - People felt burdened by environmental regulations.
 - Politicians tried to roll back or weaken environmental laws.
 - The U.S. retreated from its leadership role in environmental policy.

We need to stop labeling problems as environmental and show they are quality of life issues.

Copyright © 2009 Benjamin Cummings is an imprint of Pearson

The fourth wave of environmental policy

- The 1992 Earth Summit in Rio de Janeiro, Brazil, drew leaders from 179 nations.
 - It centered on the idea of sustainable development.
- This fourth wave of environmental policy focuses on sustainable development.
 - Finding ways to safeguard natural systems while raising living standards for the world's poorest people



Copyright © 2009 Pearson Prentice Hall, Inc.

Copyright © 2009 Benjamin Cummings is an imprint of Pearson

International Environmental Policy

- International law is vital to solving international problems.
- **Customary law:** arises practices or customs held by most cultures
- **Conventional law:** arises from conventions or treaties between nations
 - Montreal Protocol (1987): 160 nations agreed to reduce ozone-depleting chemicals



An international wastewater treatment plant

Copyright © 2009 Benjamin Cummings is an imprint of Pearson

Organizations help shape international policy

- International organizations influence the behavior of nations.
 - Provide funding, apply peer pressure, direct media attention
- **United Nations:** created in 1945 to maintain international peace and prosperity
 - **United Nations Environment Programme (UNEP):** helps nations understand and solve environmental problems
- **The World Bank:** established in 1944; one of the world's largest funding sources for economic development
 - Dams, irrigation, infrastructure
 - Funds unsustainable, environmentally damaging projects

Copyright © 2009 Benjamin Cummings is an imprint of Pearson

The European Union (EU)

- The **European Union** seeks to promote Europe's unity and economic and social progress
 - One of its goals is promotion of solutions to environmental problems.
 - Contained 27 member nations
 - Can enact binding treaties
 - Its regulations have the same authority as national laws.
 - Can also issue advisory directives

Copyright © 2009 Benjamin Cummings is an imprint of Pearson

The World Trade Organization (WTO)

- Established in 1995
- Represents multinational corporations to promote free trade
- Has authority to impose penalties on nations that don't comply with its directives
- Interprets some environmental laws as unfair barriers to free trade
 - Brazil and Venezuela filed a complaint against the U.S.'s EPA regulations requiring cleaner-burning fuel.
 - The WTO agreed with Brazil and Venezuela, despite threats to human health.
- Critics charge the WTO aggravates environmental problems.

Copyright © 2009 Benjamin Cummings is an imprint of Pearson

International treaties can discourage protection

- International treaties allow industries and corporations to weaken environmental protection laws.
 - These laws are seen as barriers to trade.
 - Under the North American Free Trade Agreement (NAFTA), an investor of one country can sue another country for hindering the investor's ability to make profits.
 - i.e., Canada's cattle industry demanded \$300 million from U.S. taxpayers for banning Canadian beef after mad cow disease was found in Canadian cattle
- With billions of dollars at stake, these treaties discourage states and nations from passing new environmental protection laws.

Copyright © 2009 Benjamin Cummings is an imprint of Pearson

Non-governmental Organizations (NGOs)

- **Non-governmental Organizations (NGOs):** entities that influence international policy
 - Some do not get politically involved, such as The Nature Conservancy.
 - Others try to shape policy through research, lobbying, or protest.
 - Greenpeace, Population Connection
- They apply more funding, research, and expertise toward solving environmental problems than many national governments.

Copyright © 2009 Benjamin Cummings is an imprint of Pearson

Six steps to making environmental policy



Copyright © 2008 Pearson Education, Inc., publishing as Pearson Benjamin Cummings

1

Identify the problem: requires curiosity, observation, awareness



Copyright © 2008 Pearson Education, Inc., publishing as Pearson Benjamin Cummings

2

Identify specific causes: involves scientific research

Copyright © 2009 Benjamin Cummings is an imprint of Pearson

Six steps to making environmental policy

Envision a solution and set goals: involves science, social and political action



Copyright © 2008 Pearson Education, Inc., publishing as Pearson Benjamin Cummings

3

Get organized: organizations are more effective, but a motivated, informed individual can also succeed



Copyright © 2008 Pearson Education, Inc., publishing as Pearson Benjamin Cummings

4

Copyright © 2009 Benjamin Cummings is an imprint of Pearson

Six steps to making environmental policy



Copyright © 2008 Pearson Education, Inc., publisher

5

Cultivate access and influence:

- **Lobbying:** spending time and money to influence a politician
- Environmental advocates are not very influential.

Manage development of policy: Prepare a bill, or draft a law, containing solutions



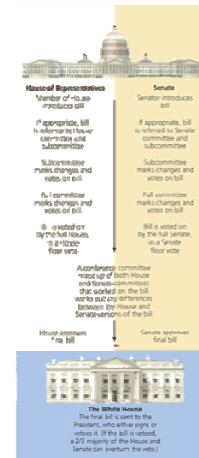
Copyright © 2008 Pearson Education, Inc., publisher

6

Copyright © 2009 Benjamin Cummings is an imprint of Pearson

How a bill becomes law

- After a law's enactment:
 - Administrative agencies implement regulations.
 - Policymakers evaluate the policy's successes or failures.
 - The judicial branch interprets the law.



Copyright © 2008 Pearson Education, Inc., publishing as Pearson Benjamin Cummings

Copyright © 2009 Benjamin Cummings is an imprint of Pearson

Science plays a role in policy

- Science provides information to make better policy.
 - A nation's strength depends on its commitment to science.
- Sometimes policymakers distort science.
 - Manipulating data
 - Censoring, suppressing, and editing reports
 - Placing unqualified people in powerful positions
 - Placing people with conflicts of interest in positions
 - Ignoring scientific advice
 - Misleading the public

Copyright © 2009 Benjamin Cummings is an imprint of Pearson

Approaches to environmental policy

- **Command-and-control** approach: environmental policy sets legal limits and threatens punishment for violators
 - Has resulted in successes: cleaner air and water
 - Most current environmental laws
 - Have resulted in safe, healthy, comfortable lives
 - Top-down, sometimes heavy-handed
 - Interest groups — people seeking private gain — unduly influence politicians.
 - Alternative approaches involve using creative economic incentives.

Copyright © 2009 Benjamin Cummings is an imprint of Pearson

Subsidies are widespread

- **Taxbreak:** the government relieves the tax burden on a business or individual to promote desirable industries or activities
- **Subsidy:** a government giveaway of cash or resources to promote environmentally sustainable activities
 - Can be used to support unsustainable activities
 - i.e., subsidies for non-renewable fuels, roads in national forests, mining on public lands

The U.S. taxpayer pays \$4,000/year in environmentally harmful subsidies and on increased prices through environmental degradation.

Copyright © 2009 Benjamin Cummings is an imprint of Pearson

Green taxes discourage undesirable activities

- Taxation can be used to discourage undesirable activities
 - Internalizes external costs
- **Green taxes:** taxes on environmentally harmful activities and products
 - **Polluter pays principle:** the price of a good or service includes all costs, including environmental degradation
 - Gives companies financial incentives to reduce pollution
 - But, costs are passed on to consumers

Copyright © 2009 Benjamin Cummings is an imprint of Pearson

Market permitting and incentives

- Markets in permits can save money and produce results
- **Permit trading:** the government creates a market in permits for an environmentally harmful activity
 - Companies, utilities, and industries buy, sell, and trade rights to conduct the activity
 - **Cap-and-trade system:** the government sets the amount of allowable pollution and issues permits to polluters to emit a certain fraction of that amount
 - Polluters can exchange these permits
 - Governments can reduce the amount of emissions

Billions of dollars each year have been saved from the permit trading system.

Copyright © 2009 Benjamin Cummings is an imprint of Pearson

Ecolabeling empowers consumers

- Another strategy that uses the market to counteract market failure
- **Ecolabeling:** tells consumers which brands use sustainable processes
 - A powerful incentive for businesses to switch to better processes
 - “Dolphin safe” tuna
- Socially responsible investing in sustainable companies



Copyright © 2009 Benjamin Cummings is an imprint of Pearson

Conclusion

- Environmental policy is a problem-solving tool.
 - It uses science, ethics, and economics.
 - It requires an understanding of the political process.
- Conventional command-and-control approach
 - Uses legislation and regulations
 - Innovative environmental policy tools have been developed
- Economic welfare does not require a trade-off with environmental quality.

Copyright © 2009 Benjamin Cummings is an imprint of Pearson