



# Lesson 7 – Property Rights: Is the Environment Different?

## Introduction

In this lesson students apply the tools of economic analysis to environmental problems. Through the analysis of historical and contemporary environmental problems, students discover the value of looking at environmental issues as problems of incentives and institutions rather than blaming them on “bad people doing bad things.”

## Objectives

At the end of this lesson, students will be able to:

- Identify ways in which “environmental quality” is like other goods and services and ways in which it is different than most goods and services.
- Compare and contrast the different types of property rights (private, common, collective).
- Discuss the problems that arise when property rights are not secure, enforceable or well-defined.
- Give examples of negative and positive externalities.
- Explain the relationship between property rights and the tragedy of the commons.
- Use marginal analysis to evaluate environmental policies.

## Economic Concepts

Coase Theorem

Negative Externalities

Tragedy of the Commons

Marginal Benefits and Costs

Positive Externalities

Transaction Costs

Property Rights

## Voluntary National Content Standards in Economics

<https://www.fte.org/teachers/teacher-resources/voluntary-national-content-standards-in-economics/>

**STANDARD 1: SCARCITY:** Productive resources are limited. Therefore people cannot have all the goods and services they want. As a result, they must choose some things and give up others.



**STANDARD 2: MARGINAL DECISION MAKING:** Effective decision making requires comparing the additional costs of alternatives with the additional benefits. Most choices involve doing a little more or a little less of something: few choices are “all or nothing” decisions.

**STANDARD 10: INSTITUTIONS:** Institutions evolve in market economies to help individuals and groups accomplish their goals. Banks, labor unions, corporation, legal systems, and not-for-profit organizations are examples of important institutions. A different kind of institution, clearly defined and well enforced property rights, is essential to a market economy.

**STANDARD 16: ROLE OF GOVERNMENT:** There is an economic role for government in a market economy whenever the benefits of a government policy outweigh its costs. Governments often provide for national defense, address environmental concerns, define and protect property rights, and attempt to make markets more competitive. Most government policies also redistribute income.

### Presentation Guidelines and Suggestions:

1. Review the economic reasoning principles developed in earlier lectures and indicate that this lesson will apply those reasoning tools to a social issue – the environment.
  - Emphasize proposition 5, acknowledging that people have strong opinions about environmental issues. Propose that the economic reasoning tools we’ve developed offer evidence with which to evaluate those opinions. (*See slides.*)
  - “The environment” or “environmental quality” is an economic good:
    - The amount we have is affected by limited resources, so it is scarce.
    - Decisions about “environmental quality” have opportunity costs.
    - People’s choices about environmental quality respond to incentives in predictable ways.
    - The incentives that influence people’s choices about “environmental quality” are shaped by environmental laws and regulations (i.e., the rules of the game).
  - However, “the environment” or “environmental quality” may also have characteristics that make it different from many other goods. For example, decisions about resource use for environmental quality may be made by people who do not bear the costs. This is source of many conflicts over environmental quality.
    - This may occur because the state of nature is such that it would cost to define and enforce ownership of the resources involved.
    - It may also occur because providing a given level of environmental quality would reallocate wealth among individuals, and government chooses not to make the correction.
  - Provide illustrations of environmental issues in which decision-makers may not bear all the costs of their decisions.
    - Example in which definition and enforcement of property rights is prohibitive: Consider a coal-fired power plant. The owner bears all of the costs of the land,



concrete, steel used in production, but does *not* pay for the clean air used in the power generation process.

- The owner of the plant thus uses far more clean air (and generates more carbon dioxide, sulfur dioxide, nitrous oxide, soot, etc. in the generation process) than he would if he had to pay for the clean air input.
    - In this example, it is too costly to define and enforce ownership in individual “parcels” of air that people could choose to sell to the operator of the plant. (Note: that we do sell air rights in several major cities.)
    - The result is “air pollution” to a greater amount than if the plant owner paid for the clean air input.
  - Example in which wealth redistribution effects create barriers to producing desired levels of environmental quality: Consider wild salmon fishing. Fishermen must pay for their boats and gear, but when they catch and keep a fish, they do not pay for the reduced stocks of fish in the future that result when a fish is removed from the ocean.
    - The predictable result is “overfishing,” sometimes to the extent that the existence of a species is threatened.
    - The solution to this problem is to allocate rights to catch fish in the form of “individual fishing quotas” (IFQs), that can be traded in the market. Ownership of IFQs induce fishermen to act *as though* all of the future consequences of catching a fish are borne by them.
    - However, the government often refuses to implement the IFQs solution, because of disputes over who should get what share of the IFQs and the resulting profits from fishing.
2. Discuss the definition of property rights and provide examples and illustrations of the 3 types of property rights institutions.

Property rights may be *private, common, or collective*.

- Private property ownership allows the owner to exclude others from the use of the resource.
  - Private property creates incentives for conservation and improvement of resources. A stable, dependable enforcement mechanism is essential for these incentives to work.
- Common property is characterized by the inability to exclude users.



- Common property arrangements – shared ownership arrangements where “everyone” owns the property together – create incentives for overuse, a phenomenon known as “the tragedy of the commons.”
- Common property *can* be an effective alternative to private ownership of large-scale resources, *if* access to the resource can be kept closed to outsiders.
- Collective property is similar to common property in that ownership is shared, but it differs in that decision-making is through government and political processes and in that individuals cannot avoid “ownership” without departing from the political jurisdiction.
  - Collective property arrangements can be either public or private.
    - A country club swimming pool is an example of a private collective.
    - A city-owned swimming pool is an example of a public collective.
- Because users cannot be excluded, collective ownership creates incentives that lead to the *tragedy of the commons*.
- If effective *exclusion* is feasible, common and collective ownership arrangements can avoid the *tragedy of the commons*.
  - Community run fisheries in the coastal waters off New England and Newfoundland, for example, have effectively solved the problem of depleted fish stocks that resulted from over-fishing in common waters.
- Collective ownership (and sometimes common ownership) also creates incentives for political allocation of benefits and “rent-seeking” behavior.

#### TEACHING TIPS FOR EFL PROFESSORS:

- Refer back to “The Fish Activity” conducted by the mentor teacher at the beginning of the morning session.
  - Provide additional examples of problems and solutions of common property ownership:
    - Food in a shared apartment refrigerator.
    - Fishing in international waters.
    - See Donald Leal: *Community-Run Fisheries: Avoiding the Tragedy of the Commons*. PERC Policy Series PS-7 <https://www.perc.org/wp-content/uploads/old/ps19.pdf>
3. Establish the link between government enforcement of property rights and wealth-creating trade. Governments play a key role in the definition and enforcement of property rights and, therefore, the effectiveness with which nations address social concerns like environmental quality, poverty, etc.
- Clearly defined and well-secured property rights add value to goods and services, and facilitate wealth-creating trade.
  - Differences in the legal “rules of the game” that define and secure property rights vary the incentives for wealth-producing trade.



- Analyzing historical and contemporary examples of different property rights schemes illustrates the value of looking at environmental issues as problems of incentives rather than blaming them on “bad people doing bad things”.

#### TEACHING TIPS

- Provide examples of how failure to define and protect property rights disadvantages the poor in developing countries. See *story on goat stew and property rights in Malawi (Case 2)*: <https://www.fte.org/teachers/teacher-resources/lesson-plans/is-capitalism-good-for-the-poor-2/lesson-2-property-rights-and-the-rule-of-law/>
  - Discuss example of how differences in the “rule of law” between countries affect wealth and standard of living:
    - Lack of strict and comparative liability codes makes insurance markets less feasible in many poor countries.
    - Without insurance markets, individuals bear high risks in ordinary living and business relationships.
    - Without insurance products and markets, many products are less valuable, such as homes.
  - Provide examples from FTE’s “Is Capitalism Good for the Poor?” of the detrimental effects on the poor of lack of property rights in developing countries. <https://www.fte.org/teachers/teacher-resources/lesson-plans/is-capitalism-good-for-the-poor-2/lesson-2-property-rights-and-the-rule-of-law/>
    - Study in Brazilian Amazon frontier of how title increases investment in land among poor.
    - Case studies on property rights in India and Malawi.
4. Conflicts over regulatory and eminent domain “takings” arise when property rights are not secure.
- Example of regulatory takings: restrictions on landholders’ use of their property that result from enforcement of endangered species legislation.
  - Example of eminent domain takings: decision by a government that a private piece of property would be better put in a “public” use. Government may force the owner of the property to sell at a “fair” market price, whether or not the owner wishes to sell.

#### TEACHING TIPS

- Discuss examples of poorly defined or secured property rights:
- Examples from PERC website of regulatory takings through endangered species habitat protections and “The Endangered Species Act: Making Innocent Species the Enemy”



<https://www.perc.org/1995/04/01/the-endangered-species-act-making-innocent-species-the-enemy-2/>

- Discuss the collapse of the California salmon fishing industry.
  - Discuss recent court cases, in the U.S. and other countries that have put the property rights issue of eminent domain “takings” in the public spotlight.
    - Show news video: “Shanghai Suburbs in Train Uproar”  
<http://www.youtube.com/watch?v=mUXGiuydqIM>. (*Optional student research assignment: Does China offer compensation for such “takings”?*)
    - Show Chapter 5 of Izzit.org video “Unintended Consequences” - a student-narrated video including interview of Suzette Kelo. (*Start at 9:00 min. Approx. 5 min. Clear statement of different interpretation of “for public use.” Strongly emotional appeal of Kelo family, but even-handed treatment, including excerpts from Supreme Ct. decisions and coverage of state changes in eminent domain laws.*)  
[https://www.izzit.org/products/detail.php?video=eminent\\_domain](https://www.izzit.org/products/detail.php?video=eminent_domain)
5. Externalities occur when property rights are not defined or are not effectively enforceable.
- “Negative externalities” exist when the costs of producing a good spill over onto (are borne by) people other than those who decide how much or whether to produce that good.
    - Negative externalities result in more being produced than would be if the producers and consumers of the good bore all the costs.
  - “Positive externalities” exist when the benefits of a good or service spill over onto people other than those who decide how much or whether to produce that good.
    - Positive externalities result in less being produced – scenic views, for example – than would result if those who bore the costs could capture all the benefits.
  - When property rights are not well-defined, enforceable, and transferable, cooperation becomes more costly and markets operate less effectively to allocate resources to their most highly-valued uses.
  - The Coase Theorem provides insight into how the definition of property rights can facilitate “willing seller – willing buyer” exchanges that enhance environmental quality.
    - When property rights are well-defined, enforceable at low cost and transferable, property rights to resources will be traded in the market until they reach their highest-valued use—that is the use that maximizes net benefits, taking into account all of the costs and benefits of their use.

#### TEACHING TIPS



- Develop the concept of “externalities” using examples that are related to the environment and student life.

### Externality Examples

- Suppose that you show up at the Prom and another girl is wearing the same dress. Is this a positive or negative externality? Why?
  - Your brother or sister just finished a big homework assignment and is relaxing by watching TV. However, the sound is rather loud. Is this a positive or negative externality? How are such disputes settled in your family?
  - A smoker lights up a cigar as you wait for a bus. Is this a positive or negative externality? Why? Ask about the present and future costs (smelly clothes now and possible health effects later in life).
  - In John Grisham’s recent novel, “The Appeal,” a chemical company pollutes the town drinking water by improperly disposing of chemical waste. Cancer rates in the town soar after several years of dumping. Is this a positive or negative externality? Explain that the “rule of law” in our legal system has established liability laws that attempt to sort out responsibility in these types of situations. This is not true in many less developed countries.
- Illustrate the difference between private and social (or market) costs.
  - Illustrate how cooperation becomes more difficult (costly) and markets operate less efficiently when externalities are present.
  - Video on China’s growth and its impact on pollution. (*Discusses so-called “Green GDP”, which subtracts pollution costs from GDP. Good for discussion.*)  
<http://www.youtube.com/watch?v=t77bLtlck2g>
6. Some environmental problems arise because of a failure to account for differences in present and future values.
- People place a premium on goods available now over goods not available until the future. (a premium reflected in a positive interest rate)
  - Sensible environmental policies take this premium into account, insisting that more than a dollar’s worth of benefits be received in the future before a dollar’s worth of costs are incurred today.

### TEACHING TIPS:

- Develop the importance of the difference in present and future values using the carbon emission or global warming debates.



- Use illustration of \$10 bill to be auctioned. A complete bill will sell for near \$10. Change the rules by tearing the bill in half and promising to mail the one half to the winner over winter vacation. How much will this bill sell for?
- Refer to the “Farmers and Fishers” activity from the mentor teacher session to illustrate the Coase Theorem in operation.
- Ronald Coase observed that when transactions cost are very low or zero, the “nominal” assignment of property rights will not affect output or production decisions for goods that create externalities. Instead, these decisions will be determined by the relative benefits and costs of those affected by these decisions.
- Discuss Trumpeter Swan Society agreement with Idaho farmers water bank as real world example of “willing seller – willing buyer” exchange made possible by clear definition of property rights and rules of the game that allow exchange. (*See slides.*)
- Sample illustration: **Zoning in Miami** (*See slide.*)
  - Miami, FL (and other cities) has redefined its beach and downtown skyline with many new high-rise projects.
  - In one municipality (City of Key Biscayne), a local developer sought to build several high-rise towers (approximately 600 units) directly on the ocean, blocking some views in neighboring buildings and increasing traffic flows into and out of this swank island off the bay from downtown Miami.
  - The local city commission had to give its approval for these towers because it required exemptions from several zoning rules.
  - There were local hearings where residents voiced complaints about traffic and the overcrowding the new units would bring to the on-island public elementary school.
  - The developer made many “concessions” to the residents, including paying for turn lanes and median landscaping near the project, paying \$3 million to help renovate the local elementary school and contributing nearby land for a new beach access path and park. The total value of the developer concessions was estimated to be \$12 million.
  - The project was finally approved. The average condos sold for over \$1 million.
    - What can you conclude about the cost to residents of increased traffic, school crowding, beach access, etc. compared to the expected profits to the developer from the project?
    - Under what circumstances would you expect that such a project would not be constructed?



7. Marginal analysis helps us to determine the optimal level of pollution—that is the level that yields the highest net benefit from our scarce resources.
- At the margin, the optimal level of pollution is higher than 0%, and the optimal level of environmental quality is less than 100%.
  - Activities like pollution abatement or environmental preservation should continue *only* up to the point where marginal benefit equals marginal cost.

#### TEACHING TIPS

- Address carbon emissions and global warming issues.
  - The issue of global warming illustrates the importance of understanding discounting to allow for the difference between present and future values.
  - Most of the costs of altering emissions would be incurred today, whereas most of the benefits will not be enjoyed until far into the future.

#### Carbon emissions sources:

- Article: “The carbon offset market: Leveraging forest carbon's value in the Brazilian Amazon”  
<https://www.sciencedaily.com/releases/2019/04/190405170454.htm>
- Chicago Climate Futures Exchange: <http://www.chicagoclimatex.com/>
- EPA Clean Air Markets: <http://www.epa.gov/airmarkets/index.html>
- Develop the idea that zero pollution is not the answer and that marginal analysis helps us determine the “right” amount of pollution.
  - Begin by playing displaying the Captain Planet logo (*See slides*) and playing the “Captain Planet” theme song. <https://youtu.be/ZGegECwSiGY>
  - Revisit concept of marginal analysis.
    - Marginal analysis is the comparison of additional (marginal) benefit and additional (marginal) cost.
    - Emphasize optimality of equating marginal benefit and marginal cost.
    - If marginal costs of abatement exceed marginal benefits, then would expect to see some pollution.
    - Explain that it is efficient to reduce pollution to zero only if the marginal cost of abatement is zero.
    - Develop example from current events – Superfund clean-up, etc.
    - <https://www.perc.org/2009/03/03/superfund-follies-part-ii/> “Super Fund Follies, Part II,” PERC



## Conclusion

- The “tragedy of the commons” arises when property rights are not well defined or not enforced.
- Well defined property rights increase the market value of products and services.
- Many environmental problems arise because property rights are not clearly-defined or secure, and prices cannot effectively signal the (marginal) costs to the marketplace. These conditions may create a role for government action.
- When property rights are well-defined and cheaply enforceable and transferable, resources can be allocated privately by market participants in ways that maximize their net values and thus yield the highest wealth to society.

## Additional Resources:

Policy debates on the Environment:

[http://www.swlearning.com/economics/policy\\_debates/econ\\_debates\\_economics\\_and.html](http://www.swlearning.com/economics/policy_debates/econ_debates_economics_and.html)