

## Chapter 13

# COMMON PROPERTY RESOURCES AND PUBLIC GOODS

*Microeconomics in Context* (Goodwin, et al.), 3<sup>rd</sup> Edition

### Overview and Objectives

*This chapter provides a classification of different types of goods based on the properties of rivalness and excludability. Non-private goods include artificially scarce goods, common property resources, and public goods. For each of these types of goods, government interventions may be warranted for reasons of efficiency and fairness. The chapter concludes with a discussion of global climate change, which incorporates many of the issues raised in Chapter 12 and earlier in this chapter.*

After reading and reviewing this chapter, you should be able to:

1. Classify goods into four categories based on the properties of rivalness and excludability.
2. Indicate why markets for artificially scarce goods are economically inefficient.
3. Describe why an unregulated outcome for a common property resource will be inefficient, and how policies can be used produce a more efficient outcome.
4. Discuss why private markets don't exist for public goods, and how a government can determine the efficient provision level for a public good.
5. Describe the causes and consequences of global climate change.
6. Summarize the results of economic analyses of global climate change.
7. Summarize some of the policy responses to global climate change.

### Key Term Review

private good  
rival good  
nonexcludable good  
common property resource  
congestion  
individual transferable quota (ITQ)  
free riders  
greenhouse gases

excludable good  
public good  
nonrival good  
artificially scarce good  
price discrimination  
tragedy of the commons  
climate change  
global public good

## Active Review Questions

### *Fill in the Blank*

1. A public good is defined as one that is \_\_\_\_\_ and \_\_\_\_\_.
2. An artificially scarce good is defined as one that is \_\_\_\_\_ and \_\_\_\_\_.
3. The supply curve in the case of an artificially scarce good is \_\_\_\_\_.
4. Those who benefit from a public good without paying for it are known as \_\_\_\_\_.
5. Most of the growth in future global carbon dioxide emissions will come from \_\_\_\_\_ (developed/developing) countries.
6. The \_\_\_\_\_ was drafted in 1997 as an international treaty to reduce greenhouse gas emissions by developed countries.

### *True/False*

7. A common property resource is nonexcludable and nonrival.
8. An ocean fishery is an example of a public good.
9. An uncrowded health club is an example of a private good.
10. Market failure tends to occur in the market for artificially scarce goods.
11. The marginal cost of supply for an artificially scarce good is infinite.
12. Price discrimination can potentially increase social welfare in the case of an artificially scarce good.
13. For a common property resource, inefficiency occurs because each user of the resource fails to account for the impact of his or her actions on other resource users.
14. Individual transferable quotas for common property resources would work in theory, but have never been used in actual national policies.
15. The social marginal benefits of a public good can be obtained by the horizontal addition of individual demand curves.

16. Projections indicate that per capita carbon dioxide emissions will be the same in developed and developing countries by 2035.
17. The Stern Review's main conclusion was that the benefits of strong action on climate change far outweigh the costs of not acting.
18. The only country that signed but never ratified the Kyoto Protocol was the United States.

*Short Answer*

19. Explain in your own words why markets for artificially scarce goods tend to be inefficient.

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20. Explain in your own words why the marginal benefits of a public good differ from the willingness to pay for it.

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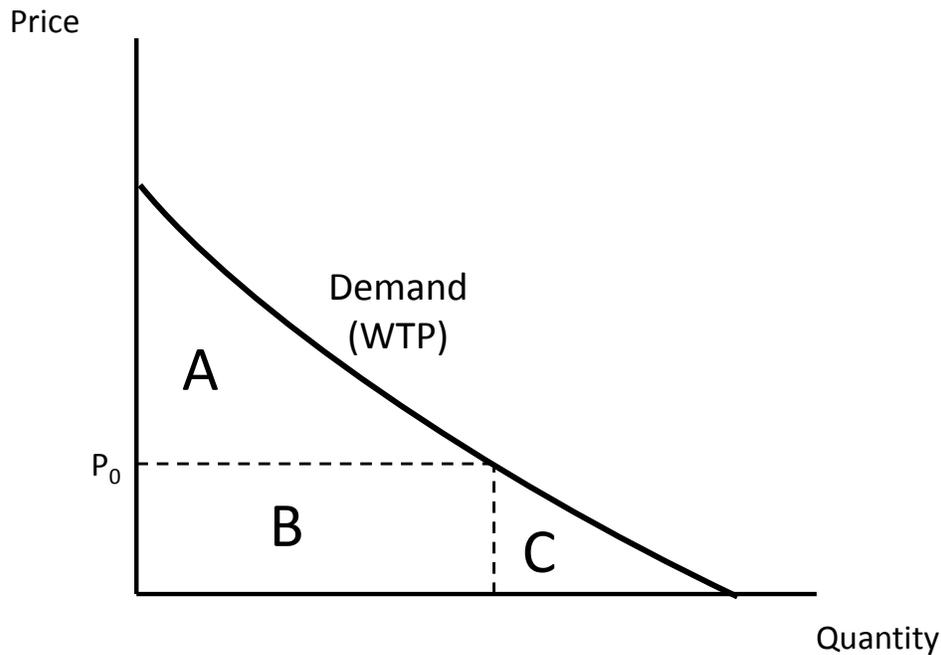
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**Self Test**

1. What does it mean to say that a good is “nonrival”?
  - a) It doesn't face any competition
  - b) It has a non-zero price
  - c) Owners can exclude others from consuming it or enjoying its benefits
  - d) It can be consumed by more than one person at a time
  - e) It suffers from congestion
2. Which one of the following is the best example of a common property resource?
  - a) Free radio
  - b) A dentist's office
  - c) Satellite radio
  - d) A community swimming pool
  - e) National defense

3. Which one of the following is the best example of a private good?
  - a) Free radio
  - b) A dentist's office
  - c) Satellite radio
  - d) A community swimming pool
  - e) National defense
  
4. Which one of the following is the best example of an artificially scarce good?
  - a) Free radio
  - b) A dentist's office
  - c) Satellite radio
  - d) A community swimming pool
  - e) National defense
  
5. If a public good suffers from congestion, then it would be re-classified as what type of good?
  - a) A common property resource
  - b) A private good
  - c) A nonrival good
  - d) A nonexcludable good
  - e) An artificially scarce good
  
6. The supply curve for an artificially scarce good is ...
  - a) A vertical line at a price of zero
  - b) A vertical line at the market price
  - c) A horizontal line at a price of zero
  - d) A horizontal line at a price of infinity
  - e) A horizontal line at the market price
  
7. Social benefits for an artificially scarce good are maximized at what price?
  - a) A price equal to average cost
  - b) It will depend on the particular market
  - c) A price of zero
  - d) A price of infinity
  - e) A price somewhere between zero and infinity

For Questions 8 and 9 refer to the following graph.



8. In the graph above showing the market for an artificially scarce good, what area(s) represent the revenue obtained by the firm supplying the good?
- a) A
  - b) B
  - c) C
  - d) A+B
  - e) B+C
9. In the graph above showing the market for an artificially scarce good, what area(s) represent the potential welfare gain if the good were sold at a price of zero instead of a price of  $P_0$ ?
- a) A
  - b) B
  - c) C
  - d) A+B
  - e) B+C

10. At the unregulated outcome for a common property resource, which statement best describes the profits at this point?
- a) Profits for each firm equal the difference between their revenues and social costs
  - b) The unregulated outcome maximizes total profits in the industry
  - c) Social costs are equal to total industry profits
  - d) Profits are sufficient to attract additional firms into the industry
  - e) Industry profits are equal to zero
11. Which one of the following statements is false?
- a) The tragedy of the commons is a likely outcome when a common property resource is unregulated.
  - b) The unregulated outcome with a common property resource is inefficient.
  - c) Each user of a common property resource creates a positive externality for other resource users.
  - d) Private markets are not suited for the allocation of public goods.
  - e) Individual transferable quotas can increase social welfare in the allocation of a common property resource.
12. The social marginal benefits of a public good are obtain by ...
- a) vertical addition of individual marginal benefit curves.
  - b) horizontal addition of individual marginal benefit curves.
  - c) vertical addition of individual willingness to pay curves.
  - d) horizontal addition of individual willingness to pay curves.
  - e) None of the above
13. What is generally considered the most appropriate method for funding the provision of a public good?
- a) Provide a subsidy to firms
  - b) Implement a system of individual transferable quotas
  - c) Allow price discrimination
  - d) Taxation
  - e) Voluntary donations
14. A free rider is defined as someone who ...
- a) accesses a common property resource without paying for it.
  - b) accesses an artificially scarce good without paying for it.
  - c) obtains a private good without paying for it.
  - d) avoids paying taxes that used to provide public goods.
  - e) receives the benefits of a public good without paying for them.

15. Which one of the following is not considered to be one of the likely effects of global climate change?
- a) Warmer average temperatures in most, but perhaps not all, regions
  - b) Increased economic output
  - c) On average, more frequent precipitation
  - d) Rising sea levels
  - e) An increase in species extinction
16. Which one of the following statements is false?
- a) Climate change will increase economic activity, primarily because it will increase agricultural production.
  - b) Burning fossil fuels generates emissions of carbon dioxide.
  - c) Greenhouse gases can remain in the atmosphere for decades, or even longer.
  - d) Global average temperatures have already increased by about one degree Celsius.
  - e) Climate change can be considered to be the result of a market failure.
17. Which one of the following statements is true?
- a) Emissions of carbon dioxide per capita will be about equal in developing and developed countries within 30 years.
  - b) Most of the growth in global carbon dioxide emissions in the next few decades will be from the United States.
  - c) At the 2009 meeting on climate change in Copenhagen, over 130 countries agreed in principle to limit warming to no more than 5 degrees Celsius.
  - d) Five degrees Celsius represents the approximate global temperature difference between now and the last ice age.
  - e) There is considerable disagreement among climate scientists about whether humans are impacting the global climate.
18. What is the primary difference between economic analysis of climate change that recommend significant policy action, and those that recommend only a modest policy response?
- a) Whether the impacts in developing countries are calculated as a percent of total income or in absolute dollars
  - b) The assumption about the extent of melting in Greenland and Antarctica
  - c) The choice of the discount rate
  - d) The choice of the price elasticity of demand for fossil fuels
  - e) The assumption about the adoption of renewable energy

19. What was the only country to sign, but never ratify, the Kyoto Protocol?

- a) Australia
- b) China
- c) India
- d) Russia
- e) United States

20. Which one of the following statement is false?

- a) An advantage of a carbon tax over a cap-and-trade policy is that the tax provides certainty about the price of emissions.
- b) The European Union has implemented a tradable permit system for carbon emissions.
- c) Developing countries such as China and India were not bound to carbon emission reductions under the Kyoto Protocol.
- d) The Kyoto Protocol never entered into force because the United States withdrew from the treaty.
- e) The atmosphere can be considered a global public good.

*Answers to Active Review Questions*

1. nonexcludable; nonrival
2. excludable; nonrival
3. a horizontal line at a price of zero (or essentially nonexistent)
4. free riders
5. developing
6. Kyoto Protocol
7. False
8. False
9. False
10. True
11. False
12. True
13. True
14. False
15. False
16. False
17. True
18. True
19. In an efficient market, equilibrium occurs where the marginal benefits are just equal to the marginal costs. In a market for an artificially scarce good, the marginal cost of providing it is zero. But a private company can't sell its products for a price of zero. So the market price will be above marginal cost and equilibrium will be determined by the intersection of price with the demand curve (marginal benefits). But there are still consumers willing to pay a positive price for the good, but not the market price. The company could increase its profits and additional consumers could obtain a consumer surplus if these additional consumers were able to purchase the good at a lower-than-market price. In other words, if the price discrimination were possible, overall social welfare could be increased.
20. For a typical good, one's marginal benefits are equal to his or her willingness to pay for it. But with a public good, one can receive the benefits of it without paying. In other words, one can be a free rider. So one's willingness to pay for the public good may be considerably less than his or her willingness to pay, and may even be zero.

*Answers to Self Test*

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| 1. d  | 11. c |
| 2. d  | 12. a |
| 3. b  | 13. d |
| 4. c  | 14. e |
| 5. a  | 15. b |
| 6. c  | 16. a |
| 7. c  | 17. d |
| 8. b  | 18. c |
| 9. c  | 19. e |
| 10. e | 20. d |