


Seventh Edition

Principles of  
**Economics**  
N. Gregory Mankiw



CHAPTER  
**11** Public Goods and  
Common Resources

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In this chapter,  
look for the answers to these questions

- What are public goods? What are common resources? Give examples of each.
- Why do markets generally fail to provide the efficient amounts of these goods?
- How might the government improve market outcomes in the case of public goods or common resources?

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Introduction

- We consume many goods without paying: parks, national defense, clean air & water.
- When goods have no prices, the market forces that normally allocate resources are absent.
- The private market may fail to provide the socially efficient quantity of such goods.
- One of the Ten Principles from Chapter 1:  
**Governments can sometimes improve market outcomes.**

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Important Characteristics of Goods

- A good is **excludable** if a person can be prevented from using it.
  - *Excludable*: MOS rice burgers, Wi-Fi access
  - *Not excludable*: AM/FM radio signals, national defense
- A good is **rival in consumption** if one person's use of it diminishes others' use.
  - *Rival*: fish tacos
  - *Not rival*: An MP3 file of David Tao's latest single

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The Different Kinds of Goods

**Private goods**: excludable, rival in consumption  
Example: food

**Public goods**: not excludable, not rival  
Example: national defense

**Common resources**: rival but not excludable  
Example: fish in the ocean

**Club goods**: excludable but not rival  
Example: cable TV

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ACTIVE LEARNING 1  
Categorizing roads

- A road is which of the four kinds of goods?
- *Hint*: The answer depends on whether the road is congested or not, and whether it's a toll road or not. Consider the different cases.

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## ACTIVE LEARNING 1

### Answers

- Rival in consumption? Only if congested.
- Excludable? Only if a toll road.

#### Four possibilities:

- Uncongested non-toll road: public good
- Uncongested toll road: club good
- Congested non-toll road: common resource
- Congested toll road: private good

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## The Different Kinds of Goods

- This chapter focuses on public goods and common resources.
- For both, externalities arise because something of value has no price attached to it.
- So, private decisions about consumption and production can lead to an inefficient outcome.
- Public policy can potentially raise economic well-being.

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## Public Goods

- Public goods are difficult for private markets to provide because of the *free-rider problem*.
- **Free rider:** a person who receives the benefit of a good but avoids paying for it
  - If good is not excludable, people have incentive to be free riders, because firms cannot prevent non-payers from consuming the good.
- Result: The good is not produced, even if buyers collectively value the good higher than the cost of providing it.

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## Public Goods

- If the benefit of a public good exceeds the cost of providing it, **govt should provide the good** and pay for it with a tax on people who benefit.
- Problem: Measuring the benefit is usually difficult.
- **Cost-benefit analysis:** a study that compares the costs and benefits of providing a public good
- Cost-benefit analyses are imprecise, so the efficient provision of public goods is more difficult than that of private goods.

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## Some Important Public Goods

- National defense
- Knowledge created through basic research
- Fighting poverty

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## Common Resources

- Like public goods, common resources are not excludable.
  - Cannot prevent free riders from using
  - Little incentive for firms to provide
  - Role for govt: **seeing that they are provided**
- Additional problem with common resources: rival in consumption.
  - Each person's use reduces others' ability to use
  - Role for govt: **ensuring they are not overused**

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## The Tragedy of the Commons

- A parable that illustrates why common resources get used more than is socially desirable.
- Setting: a medieval town where sheep graze on common land.
- As the population grows, the # of sheep grows.
- The amount of land is fixed, the grass begins to disappear from overgrazing.
- The private incentives (using the land for free) outweigh the social incentives (using it carefully).
- Result: People can no longer raise sheep.

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## The Tragedy of the Commons

- The tragedy is due to an externality: Allowing one's flock to graze on the common land reduces its quality for other families.
- People neglect this external cost, resulting in overuse of the land.

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## ACTIVE LEARNING 2

### Policy options for common resources

- What could the townspeople (or their government) have done to prevent the tragedy?
- Try to think of two or three options.

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## ACTIVE LEARNING 2

### Answers

- Impose a corrective tax on the use of the land to "internalize the externality."
- Regulate use of the land (the "command-and-control" approach).
- Auction off permits allowing use of the land.
- Divide the land, sell lots to individual families; each family will have incentive not to overgraze its own land.

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## Policy Options to Prevent Overconsumption of Common Resources

- Regulate use of the resource.
- Impose a corrective tax to internalize the externality.
  - Example: hunting & fishing licenses, entrance fees for congested national parks
- Auction off permits allowing use of the resource.
  - Example: spectrum auctions by the U.S. Federal Communications Commission
  - [4G LTE Cell Phone License Auctions in Taiwan](#)
- If the resource is land, convert to a private good by dividing and selling parcels to individuals.

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## Some Important Common Resources

- Clean air and water
- Congested roads
- Fish, whales, and other wildlife
- "Lin" won the [Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel 2009](#) for studying how real people **manage common resources** both in the field (case study) and lab (experiments)
- Al Roth won the [Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel 2012](#) for "**designing markets**" for medical interns, school choice and even organ transplants (kidney exchange)

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## CASE STUDY:

### “You’ve Got Spam!”

- Some firms use spam e-mails to advertise their products.
- Spam is *not excludable*: Firms cannot be prevented from spamming.
- Spam is *rival*: As more companies use spam, it becomes less effective.
- Thus, spam is a common resource.
- Like most common resources, spam is overused – which is why we get so much of it!



*“Spam” email is named after everyone’s favorite delicacy.*

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## CONCLUSION

- Public goods tend to be under-provided, while common resources tend to be over-consumed.
- These problems arise because property rights are not well-established:
  - Nobody owns the air, so no one can charge polluters. Result: too much pollution.
  - Nobody can charge people who benefit from national defense. Result: too little defense.
- The govt can potentially solve these problems with appropriate policies.

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## Summary

- A good is excludable if someone can be prevented from using it. A good is rival in consumption if one person’s use reduces others’ ability to use the same unit of the good.
- Markets work best for private goods, which are excludable and rival in consumption. Markets do not work well for other types of goods.

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## Summary

- Public goods, such as national defense and fundamental knowledge, are neither excludable nor rival in consumption.
- Because people do not have to pay to use them, they have an incentive to free ride, and firms have no incentive to provide them.
- Therefore, the government provides public goods, using cost-benefit analysis to determine how much to provide.

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## Summary

- Common resources are rival in consumption but not excludable. Examples include common grazing land, clean air, and congested roads.
- People can use common resources without paying, so they tend to overuse them. Therefore, governments try to limit the use of common resources.

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## Public Goods

- Excludable vs. Rivalness
- Public Goods
  - non-excludable and non-rival goods
- Common Resources
  - Non-excludable and rival goods
- Homework: Mankiw, Ch.11, Problem 4, 5, 8, 10.

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