Public Goods and Common Resources

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- Most goods in our economy are allocated in markets – buyers pay for what they receive and sellers are paid for what they provide.
- **Free goods**:
  - People do not pay a fee when they choose to enjoy the benefit of the good.
  - The market forces that normally allocate resources in our economy are absent.
- When a good does not have a price attached to it, private markets *cannot* ensure that the good is produced and consumed in the proper amounts.
- In such cases, government policy can potentially remedy the market failure that results, and raise economic well-being.

Characteristics of goods

- Characteristics of goods:
  - *Is the good excludable?*
  - *Is the good rivalrous?*
- ***Excludability***
  - Property of a good whereby a person can be excluded from using it unless it is paid for.
  - Examples (and opposite?)
- ***Rivalry (in consumption)***
  - Property of a good whereby one person's consumption of it means no one else can use it (making it impossible for use by another person).
  - Examples (and opposite?)

The different types of goods

- ***Private Goods:*** Goods that are both excludable and rival in consumption; can be divided up and provided separately to different individuals with no external benefits or costs to others.
- ***Public Goods:*** Goods that are neither excludable nor rival in consumption; goods whose benefits are indivisibly spread among the entire community, whether or not the individuals desire to buy the goods.
- ***Common Resources:*** Goods that are rival in consumption but not excludable
- ***Club goods (provided by natural monopolies)*:** Goods that are excludable but not rival in consumption

The different types of goods

	Rivalrous	Non-rivalrous
Excludable	**Private goods** • Food • Clothing • Automobiles	**Club good/Artificially scarce resources – provided by Natural monopolies** • Fire department services • Cable TV • Private park • Theatres
Non-excludable	**Common resources** • Air we breathe • Fish in the ocean • Groundwater basin • Lakes • Forests	**Public goods** • National defence • Knowledge • Street lights • Light houses

Types of goods (New classification)

- **Reference**: Ostrom, E. (2009): Beyond Markets and States: Polycentric Governance of Complex Economic Systems, Nobel Prize Lecture. https://www.nobelprize.org/uploads/2018/06/ostrom_lecture.pdf

- Replaced concept of rivalry of consumption with *subtractability of use*
- **Subtractability** refers to the degree to which one persons' use of a resource diminishes others' use

Types of goods (New classification)

Difficulty of excluding potential beneficiaries	Subtractability of Use: High	Subtractability of Use: Low
High	**Common resources** Air we breathe Fish in the ocean Groundwater basin Forests	**Public goods** National defence Fire protection services Knowledge
Low	**Private goods** Food Clothing Automobiles	**~~Club~~ Toll goods** Theatres Private clubs Daycare centre

Public goods and the free-rider problem

- A *free-rider* is a person who receives the benefit of a good but avoids paying for it.
- Since people cannot be excluded from enjoying the benefits of a public good, individuals may withhold paying for the good hoping that others will pay for it.
- The free-rider problem prevents private markets from supplying public goods (non-excludable).
- The free-rider problem in public goods - example of *market failure*. Because of the free-rider problem, they may be underproduced.

Public goods and the free-rider problem

- **Solving** the Free-Rider Problem
  - The government can decide to provide the public good if the total benefits exceed the costs.
  - The government can make everyone better off by providing the public good and paying for it with tax revenue.
- Some important public goods
  - National defence
  - Creation of knowledge (profit-seeking firms can free-ride by devoting too few resources)
  - Fighting poverty

Public vs. Private good – a relative concept

- In deciding whether something is a public good, *one must determine the number of beneficiaries and whether these beneficiaries can be excluded from enjoying the good*. If they can be excluded, then it is a private good, else a public good.
- E.g. Street lights in a closed residential community vs. street lights on the road.
- A free-rider problem arises when the number of beneficiaries is large and exclusion of any one of them is impossible.

Cost-benefit analysis

1. Government needs to provide public goods as the private market (by itself) does not produce an efficient quantity.
2. Government needs to determine which public goods to provide and the in what quantity.

- *Cost-benefit analysis* refers to a study that compares the costs and benefits to society of providing a public good.

- In order (for the government) to decide whether to provide a public good or not, the total benefits of all those who use the good must be compared to the costs of providing and maintaining the public good.

Cost-benefit analysis

- A cost-benefit analysis would be used to estimate the total costs and benefits of the project to society as a whole.
  - Difficult to quantify benefits
    - Using surveys
    - Individuals may not report true benefits (when?)
  - Without accurate prices, it is difficult to assess attributes such as:
    - the value of consumers' time
    - the aesthetics of public good projects
    - the value of life: Does this have an implicit value?
- Efficient provision of public goods inherently more difficult than private goods (prices)

Common Resources

- **Recall**: Goods that are rival in consumption but not excludable. E.g. Air we breathe, fish in the ocean, etc.
- Common resources, like public goods, are not excludable (available free of charge). They are available free of charge to anyone who wishes to use them.
- Common resources are rival goods because one person's use of the common resource reduces other people's use.
- **Issue**: Once the good is provided, concern (for policymakers) is about how much is used.

Tragedy of Commons

- **Examples**: grazing land in a village, fish in the ocean, water supply from a lake, forests used for firewood, manufacturing paper etc.
- Why common resources get used more than is desirable from the standpoint of society as a whole?
  - Common resources tend to be used excessively when individuals are not charged for their usage.
  - This is similar to a negative externality – Why?
    - Excessive usage of the good would deplete its availability and affect its consumers.

Tragedy of Commons

- **Causes:** (i) excessive usage (free good) causing scarcity, (ii) differing social and private incentives (no collective action to start with).

- **Solutions:** Internalize the externality through -
  - Regulation of the common resource
  - Taxation
  - Tradable permits
  - Introduce **property rights**: Divide the scarce common resource (convert it into it a *private good*)

- "*…natural resources that were collectively used by their users would be over-exploited and destroyed in the long-term. Elinor Ostrom disproved this idea by conducting field studies on how people in small, local communities manage shared natural resources, such as pastures, fishing waters, and forests. She showed that when natural resources are jointly used by their users, in time, rules are established for how these are to be cared for and used in a way that is both economically and ecologically sustainable….*"

- [Elinor Ostrom – Facts. NobelPrize.org. Nobel Media AB 2020.]

Common resources

- Clean air and water
  - Pollution is a negative externality (regulation, taxes, etc.)
  - This market failure is an example of a common resource problem.
- Congested roads (Uncongested roads are a public good)
  - Congestion imposes a negative externality (makes it a common resource)
  - Impose toll (Pigovian tax): staggered toll is more effective.

- Crude oil
  - Excessive exploration – negative externality
  - Private solution (Coase theorem) - why?
- Fish, whales, and other wildlife – Ocean is one of the least regulated common resources.
  - International cooperation required to devise solutions
  - Vast expanse of oceans makes enforcement difficult

Introduce property rights

- The market fails to allocate resources efficiently when *property rights* are not well-established (i.e. some item of value does not have an owner with the legal authority to control it).

- When the absence of property rights causes a market failure, the government can potentially solve the problem (by assigning property rights).