

Positive Feedback Loop: Secondary effect reinforce the basic trend, a self-reinforcing process.

E.g. capital accumulation and climate change.

Negative Feedback Loop: Self-limiting process.

E.g. Gaia Hypothesis: the Earth restores itself from damage and change.

Closed System: No inputs (energy or matter) are received from outside the system, and none are transferred outside the system.

Open System: The system imports and exports energy.

The Earth is a closed system bar solar energy and the odd moon rock.

Consumer Surplus = Total WTP (Demand)– Price.

Marketable Goods: Good that are able to be measured in terms of physical quantity and monetary value.

Non-marketable Goods: Goods that do not have one or both of the prior qualities.

Typical of environmental goods to be "Non-marketable".

Excludable Goods: It is possible and practical for the consumption of a good to be restricted to certain users.

E.g. goods such as food, petrol and bads such as smoking and household waste are excludable. Greenhouse gases public health are not.

Rivalrous (Divisible) Goods: Consumption of a good prevents use for others.

E.g. goods such as food and gas are rivalrous, public space such as parks and views are not.

Public Goods: Able to be used by all once produced, without exclusion or rivalry.

E.g. Public parks and views. Also clean air, clean water, and biological diversity.

Property rights are **exclusive** (all benefits should accrue to the owner), **transferable**, and **enforceable** (protected from seizure, unsolicited use).

Scarcity Rent: The value of the resource itself. Taxes and other government intervention is concerned with capturing the rent.

Externality: When a productive activity has an unsolicited effect on another productive activity.

E.g. Mike listening to loud music will effect Susie reading a book. Pollution is a negative externality of vehicles, reduced road congestion is a positive externality of public transport.

Free Rider: Someone who derives the value from a commodity without paying an efficient amount for its supply

Coase Theorem: Irrespective of who property rights are awarded to, the optimal market production outcome will be achieved through negotiation where administration costs are negligible.

Open-access Resources are often exploited leading to the 'tragedy of the commons.' **They are non-excludable and rivalrous (divisible).**

E.g. overharvesting of the Bison population in America as no one held property rights over their population, meaning no one was responsible for their declining population. Hunting occurred until total benefit for each hunter equalled total cost, rather than marginal benefit equalling marginal cost. This results in an inefficient allocation for the market as no one hunter has incentive to protect the bison population.

Allocations are **Pareto Optimal** if no further allocation is possible without one individual being worse off.

1st Equimarginal Principle: Social net benefits are maximised when the social marginal benefits from an allocation equal the social marginal cost.

$$PV = \frac{FV}{(1 + r)^t}$$

Where r is the **discount rate**.

$$NPV = \sum \frac{(Bt - Ct)}{(1 + r)^t}$$