

## Market Failure

A market is an exchange institution that serves society by organizing economic activity. Market use prices to communicate the wants and limits of a diffuse and diverse society so as to bring about coordinated economic decisions in the most efficient manner. Market work well when prices reflect all values. 'Market Failure' occurs when some costs and/or benefits are not fully reflected in market price. For environmental assets, market can fail if prices do not communicate society's desire and constrains accurately. Price often understate the full range of services provided by an asset, or do not exist to send a signal to the market place about the value of asset. Market failure occurs when private decisions based on these prices or lack of them; do not generate an efficient allocation of resources. Efficiency is defined as Pareto optimality – the impossibility of reallocating resources to make one persons better off without making anyone else worse off.

As an example of market failure, consider habitat destruction and the threat to biodiversity in Mdagascar. Mdagascar is one of the ecological richest, but economically poorest, countries in the world. International agencies dubbed Madagascar as a prime spot to conserve biodiversity – totality of genes, species, population and ecosystem. Habitat destruction through deforestation has increased rapidly over the last few decades. The factors leading to habitat destruction and the loss of biodiversity originate in several sources of market failure. Habitat destruction arises from public ownership and large areas of land with open access property right regime and limited government capacity to manage the land. These economic incentives encourage the overexploitation of wildlife, timber, grazing lands and croplands. Land tenure is often insecure since the local in remote areas have little or no influence over the national laws, policies, social changes and economic forces.

The market system fails to function properly for many kinds of environmental goods because such resources including the services they provide, are often not traded in market. Market failure can occur due to any or all of the following:

- Lack of or weak property rights.
- Public goods and/ or common property characteristics.
- Externalities and
- Asymmetric information

### Lack of or weak property rights

A key requirement to avoid a market failure is that markets are complete - enough markets exist to cover each and every possible transaction or contingency so that resources and move to their highest valued use. Markets will be complete when traders can costlessly creates a well-defined property rights system such that a market will exist to cover any exchange necessary. This well-defined property rights system represents a set of entitlements that define the owner's privileges and obligation for use of a resource or asset and have the following characteristics:

- Comprehensively assigned: All assets or resources must be either privately or collectively owned, and all entitlements must be known and enforced effectively.
- Exclusive: All benefits and costs from use of a resource should accrue to the owner, and only to the owner, either directly or by the sale to others. This applies to resources that are owned in common as well as to resources for which private property rights have been assigned.
- Transferable: All property rights must be transferable from one owner to another in a voluntary exchange. Transferability provides the owner with an incentive to conserve the resources beyond the time he or she expects to make of it.
- Secure: Property rights to natural resources should be secure from involuntary seizure or encroachment by other individuals, firms or the government. The owner has an incentive to improve and preserve a resource while it is in his or her control than exploit the assets.

Most of the market failures with environmental assets can be linked to incomplete markets. Markets are incomplete because of the failure or inability of institutions to establish well-defined property rights. For example, many people own land and are able to take action when damage is done to it, but they do not generally own the rivers or the air, through which significant amount of pollution travel. The lack of clear and well-defined property rights for clean air thus makes it difficult for market to exist such that people who live downwind from a coal-fired power plant can halt the harm that the plant does to them or successfully demand a fee, equivalent to the costs they bear, from the operator to upwind plant.

## Public goods

Public good is a second form of market failure. Actually, a public good could be considered as a special form of externality. A Public good exist when a person cannot be excluded from its provision and when one person's consumption of a good does not reduce its availability to anyone else. These two conditions of non-excludability and non-rival consumption separate a public good from a private good, which is excludable and rival.

Economists make use of the terms pure and impure public goods. The difference is that the pure public good is both non-excludable and non-rival; whereas impure public good might be either non-excludable or non-rival but not both. Climate change protection, ozone layer, biodiversity and the high seas are example of pure public good in which the benefits accrue to all those around the world. Common property and club goods like rivers, local parks, and lakes are impure goods because benefits can excludable from non-members of the group who owns the resource.

Non-exclusion depends on the physical characteristics of the good and property rights regime. Climate change protection is the most obvious form of public good in the environment. No nation can be excluded from the emission reduction efforts of another nation. Biodiversity preservation is another example of a public good. Non-rivalness also depends on the characteristics of the good. The benefit gained from the resource is independent of the number of other people who wish to use it.

How market fails linked with Public good? Open spaces are a public good if defined as an aesthetic available to all people in the same amount-my visual consumption of open space doe not reduce your access nor reduce the amount of open space. The potential problem with using the market to provide this public good voluntarily is free riding, since he or she cannot be excluded from the same amount of the good. In reality, people do contribute to the provision of some public good voluntarily everyday. The question is whether people voluntarily contribute an amount of effort or money that equals the amount they actually benefit from the good. The market fails because people have undersupplied the socially optimal level of the public good. Market failure occurs with voluntarily public good provision when people contribute any amount less then their true benefits for the good.

## The Commons

The commons are an impure public good if the resource is defined by rivalrous consumption and non-excludability or open access. If one person's use reduces the total availability to all, everyone has an incentive to capture the benefits as quickly as possible before someone else gets them. This free-for-all leads to the economically efficient use of resource. By inefficiency, we mean that the fishers harvest to the point at which incremental costs exceed the incremental revenue (i.e market price) of harvesting. Over use implies that the market price has failed to signal the true scarcity of the asset.

What happens in open access commons? Each fish has an incentive to catch as many fish before someone else catches the same fish. He has no incentive value the scarcity to the fish because if he does not catch them someone else will. His decision to leave the fish be is not respected by others because they have as right to the fish as he does. Therefore, he starts expending efforts and in doing so, his effort is such that his incremental costs end up exceeding his incremental revenue.

Open access is the case in which we might witness a 'tragedy of commons'. Since every one has access, all have the rights to the resource and scarcity value is ignored. However, the reality is that most commons have a property right scheme, either formal or informal, that works to allocate resources in a more economically efficient manner. Market failure need not always occur with the commons. People have and continue to define rules to capture the scarcity value of a resource shared by many people. Be aware that often market failure is associated with the commons when people use the term 'the commons'.

## Externalities

Externalities arise because of the non-existence of market, that is, there are no markets in clean air or peace and quiet. An externality arises when a mutually beneficial transactions between two or more than two parties results in a third-party effect where someone not a party to the transaction is either better off or worse off. Externalities can be positive, that is, there can be gains for both the affected parties and the generators of externalities. A quantitative analysis of externalities would require that both parties can be precisely identified and that the externalities can be valued in monetary terms. In many situations, such an analysis of externalities is too difficult. This could be due to lack of information, an inability to define the monetary value of the external effects. The pollution from an electricity plant damages agriculture, then former should be decide how much pollution is acceptable or the polluter should be decide how much pollution to generate.

### A summary of the impact of the externalities

	Negative externality	Positive externality
Quantity produced	Greater than optimal	Lower than optimal
Social costs/benefits	Social cost greater than socially optimal	Social benefits less than socially optimal
Price	Too low	Too high
Stimulus to innovate	Little incentive to reduce social costs	Little incentive to expand social benefits

**Source:** Anil Markandya

Most standard example of pollution reflect a direct externality-you breathe or drink polluted air or water and you have a direct impact on your health. But over the last century measuring the effect of the externalities has become more complicated. Determining causes and potential effect is less obvious in many cases. The effects are often less direct and more roundabout. Ecosystem externalities capture indirect impacts.

## Asymmetric information

Market failure can occurs when people cannot observe what other people are doing. Without complete information, markets will be incomplete and can fail to allocate resources efficiently. The two types of asymmetric information problems are referred to as moral hazard and adverse selection.

Moral hazard confounds market operations because one person cannot observe the hidden actions of others. Moral hazard implies that the regulator cannot perfectly monitor pollution abatement, and therefore a firm could shrink or pollution control. The firm has an incentive shrink if it bears all the control costs in return for a fraction of the benefits. The adverse selection problem exists when one person cannot identify the type or character of the second person.