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<https://www.investopedia.com/terms/t/tragedy-of-the-commons.asp#:~:text=The%20tragedy%20of%20the%20commons%20is%20a%20problem%20in%20economics.common%20resource%20C%20to%20everybody's%20detriment.>

The Tragedy of the Commons

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What is Tragedy Of The Commons?

The tragedy of the commons is an economics problem in which every individual has an incentive to consume a resource, but at the expense of every other individual -- with no way to exclude anyone from consuming. Initially it was formulated by asking what would happen if every shepherd, acting in their own self-interest, allowed their flock to graze on the common field. If everybody does act in their apparent own best interest, it results in harmful over-consumption (all the grass is eaten, to the detriment of everyone)

The problem can also result in under investment (since who is going to pay to plant new seed?), and ultimately total [depletion](#) of the resource. As the demand for the resource overwhelms the supply, every individual who consumes an additional unit directly harms others -- and themselves too -- who can no longer enjoy the benefits. Generally, the resource of interest is easily available to all individuals without barriers (i.e. the "[commons](#)").

KEY TAKEAWAYS

- The tragedy of the commons is a problem in economics that occurs when individuals neglect the well-being of society in the pursuit of personal gain.

- This leads to over-consumption and ultimately depletion of the common resource, to everybody's detriment.
- For a tragedy of the commons to occur a resource must be scarce, rivalrous in consumption, and non-excludable.
- Solutions to the tragedy of the commons include the imposition of private property rights, government regulation, or the development of a collective action arrangement.

Tragedy of the Commons

Understanding the Tragedy of the Commons

The tragedy of the commons is a very real economic issue where individuals tend to exploit shared resources such that the demand greatly outweighs supply, and subsequently the resource becomes unavailable for the whole.

Garrett Hardin, an evolutionary biologist by education, wrote a scientific paper titled "The Tragedy of the Commons" in the peer-reviewed journal *Science* in 1968. The paper addressed the growing concern of overpopulation, and Hardin used an example of sheep grazing land, taken from the early English economist William Forster Lloyd when describing the adverse effects of overpopulation.¹ In Lloyd's example, grazing lands held as private property will see their use limited by the prudence of the land holder in order to preserve the value of the land and health of the herd. Grazing lands held in common will become over-saturated with livestock because the food the animals consume is shared among all herdsmen.

Hardin's point was if humans faced the same issue as in the example with herd animals, each person would act in his own self interest and consume as much of the commonly accessible scarce resource as possible, making the resource even harder to find.¹

The Economics of Tragedy of the Commons

In economics terms, the tragedy of the commons may occur when an economic good is both [rivalrous](#) in consumption and non-excludable. These types of goods are called [common-pool resource](#) goods (as opposed to [private goods](#), club goods, or [public goods](#)).

A rival good means that only one person can consume a unit of a good (i.e. it cannot be shared like watching a TV show alone vs. with friends); and, when someone consumes a unit of the good that unit is no longer available for others to consume. Put differently, all consumers are rivals competing for that unit of the good, and each person's consumption subtracts from the total stock of the good available. Note that in order for a tragedy for the commons to occur the good must also be scarce, since a non-scarce good cannot be rivalrous in consumption; by definition there is always plenty to go around if it is not scarce (e.g. breathable air). A good that is non-excludable means that individual consumers are unable to prevent others from also consuming the good before you get your hands on a unit of it.

It is this combination of properties (common-pool, scarce, rivalry in consumption, and non-excludability) that sets the stage for the tragedy of the commons. Each consumer maximizes the value they get from the good by consuming as much as they can as fast as they can before others deplete the resource, and no-one has an incentive to reinvest in maintaining or reproducing the good since they can not prevent others from appropriating the value of the investment by consuming the product for themselves. The good becomes more and more scarce and may end up entirely depleted.

Overcoming the Tragedy of the Commons

A critical aspect to understanding and overcoming of the tragedy of the commons is the role that institutional and technological factors play in the rivalry and excludability of a good. Human societies have evolved many varied methods of dividing up and enforcing exclusive rights to economic goods and natural resources, or punishing those who over consume common resources over the course of history.

Regulatory Solutions

One possible solution is top-down government regulation or direct control of a common-pool resource. Regulating consumption and use, or legally excluding some individuals, can reduce over-consumption and government investment in conservation and renewal of the resource can help prevent its depletion. For example government regulation can set limits on how many cattle may be grazed on government lands or issue fish catch quotas. However, top-down government

solutions tend to suffer from the well known [rent-seeking](#), [principal-agent](#), and knowledge problems that are inherent in economic central planning and politically driven processes.

Assigning private property rights over resources to individuals is another possible solution, effectively converting a common-pool resource into a private good. Institutionally this depends on developing some mechanism to define and enforce private property rights, which might occur as an outgrowth of existing institutions of private property over other types of goods. Technologically it means developing some way to identify, measure, and mark units or parcels of the common pool resource off into private holdings, such as branding maverick cattle.

This solution can suffer from some of the same problems as top-down government control, because most often, this process of privatization has occurred by way of a government forcibly assuming control over a common-pool resource and then assigning private property rights over the resource to its subjects based on a sale price or simple political favor. In fact, this was what Lloyd was actually arguing for, as he was writing around the time of the English Parliament's Enclosure Acts, which stripped traditional common property arrangements to grazing lands and fields and divided the land into private holdings.

Collective Solutions

This brings us to another popular solution to overcoming the tragedy of the commons, that of co-operative collective action as described by economists led by Nobelist [Elinor Ostrom](#).² Before the English enclosures laws, customary arrangements among rural villagers and aristocratic (or feudal) lords included common access to most grazing and farm lands and managed their use and conservation. By limiting use to local farmers and herders, managing use through practices such as crop rotation and seasonal grazing, and providing enforceable sanctions against overuse and abuse of the resource, these collective action arrangements readily overcame the tragedy of the commons (along with other problems).

In particular, collective action can be useful in situations where technical or natural physical challenges prevent convenient division of a common-pool resource into small private parcels, by instead relying on measures to address the good's rivalry in consumption by regulating consumption. Often this also involves limiting access to the resource to only those who are parties to the collective action arrangement, effectively converting a common pool resource into a kind of club good.

Example of The Tragedy of the Commons: Fishing Rights

The Grand Banks fishery off the coast of Newfoundland is a prime example of the tragedy of the commons. For hundreds of years, fishermen in the area believed the fishing grounds to be abundant with cod fish, because the fishery supported all the cod fishing that they could do with existing fishing technology while still reproducing itself each year through the natural spawning cycle of cod fish. However, in the 1960s, advancements in fishing technology made it so fishermen could catch comparatively massive amounts of cod fish, which meant that cod fishing was now a rivalrous activity; each catch left fewer and fewer cod fish in the sea, enough to begin depleting the breeding stock and reducing the amount that could be caught by the next fisher or the next season. At the same time, no effective framework of property rights nor institutional means of common regulation of fishing was in place. Fishermen started competing with each other to catch increasingly larger amounts of cod, and by 1990, the population of cod fish in the region was so low, the entire industry collapsed.³

In some cases the tragedy of the commons can lead to the complete and permanent elimination of the common-pool resource. The extinction of the dodo bird is a good historical example. An easy to hunt, flightless bird native to only a few small islands, the the dodo made a ready source of meat to feed hungry sailors traveling the southern Indian Ocean. Due to overhunting, the dodo was driven to extinction less than a century after its discovery by Dutch sailors in 1598.⁴

Something to note here in light of the previous sections, is that Hardin's originally cited example was not an historical example of a tragedy of the commons.

English grazing lands in Lloyd's time had long since ceased to be a common-pool resource, but simply were transitioning from a common property collective action arrangement toward a more privatized land holding arrangement due to other social, economic, and political trends.

ARTICLE SOURCES

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1. American Association for the Advancement of Science. "[The Tragedy of the Commons](#)." Accessed July 31, 2020.
2. The Nobel Prize. "[Elinor Ostrom -- Facts](#)." Accessed July 31, 2020.
3. OECD Observer. "[Fisheries: The lessons of the Grand Banks](#)." Accessed July 31, 2020.
4. BBC. "[Earth -- How humanity first killed the dodo, then lost it as well](#)." Accessed July 31, 2020.

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Management of Common Pool Resources

In 2009, Indiana University political science professor, [Elinor Ostrom](#), became the first woman to win the prize. She received it "for her analysis of economic governance, especially the commons."² Ostrom's research showed how groups work together to manage common resources such as water supplies, fish, lobster stocks, and pastures through collective property rights.³ She showed that ecologist Garrett Hardin's prevailing theory of the "[tragedy of the commons](#)" is not the only possible outcome, or even the most likely outcome when people share a common resource.⁴

Hardin's theory says that common resources should be owned by the government or divided into [privately owned](#) lots to prevent the resources from becoming depleted through overuse. He said that each individual user will try to

obtain maximum personal benefit from the resource to the detriment of later users.⁵

Ostrom showed that common-pool resources can be effectively managed collectively, without government or private control, as long as those using the resource are physically close to it and have a relationship with each other. Because outsiders and government agencies don't understand local conditions or norms, and lack relationships with the community, they may manage common resources poorly. By contrast, insiders who are given a say in resource management will self-police to ensure that all participants follow the community's rules.³

Learn more about Ostrom's prize-winning research in her 1990 book, *Governing the Commons: The Evolution of Institutions for Collective Action*, and in her 1999 *Science* journal article, "Revisiting the Commons: Local Lessons, Global Challenges."^{6 7}