

Tragedy of the Commons

Sustainability is the capacity of the earth's natural systems that support life and human social systems to survive or adapt to changing environmental conditions indefinitely. Sustainability is the big idea and the integrating theme of this book.

Some of the resources we use are renewable and can be used on a sustainable basis repeatedly. Examples are the air in atmosphere and the fishes of the sea.

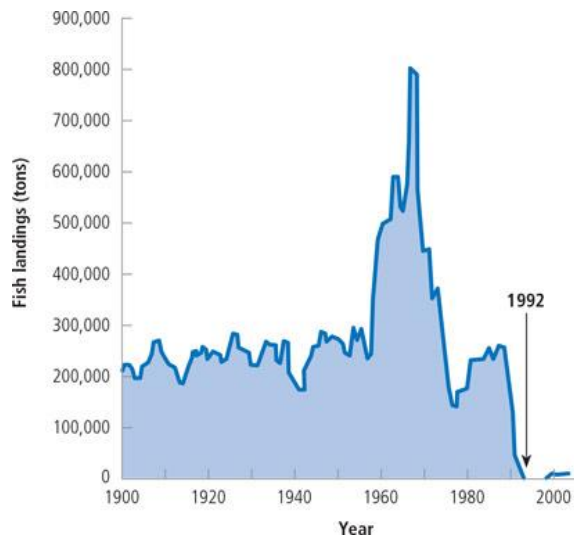
We are alive because natural processes purify the earth's air as long as we do not add pollutants to the air faster than the earth's natural processes can dilute or remove them. Populations of commercially valuable fish species such as Atlantic cod are renewable and sustainable as long as we do not remove them faster than the remaining fish can reproduce and replenish the population.

Both of these renewable resources are not owned by anyone and can be used by almost anyone. Air pollution and depletion of Atlantic cod can occur when each user of these open-access renewable resources reasons, "The little bit of pollution that I add to the air or the number of Atlantic cod that I catch in my fishing boat is not enough to matter, and anyway, they are renewable resources."

When the level of use is small, this logic works. Eventually, however, the cumulative effect of large numbers of people trying to exploit a readily available renewable resource can degrade it and eventually exhaust or ruin it. Then no one benefits and everyone loses. Biologist Garrett Hardin called such degradation of open-access renewable resources *the tragedy of the commons*. For centuries, commercial fishing boats have been removing Atlantic cod from the fishing grounds off the coast of Newfoundland. However, in the 1960s and 1970s advances in commercial fishing technology greatly increased catches of the cod. By the 1990s, populations of Atlantic cod were so low that the Grand Banks fishing industry collapsed ([Figure 1.1](#)). This put at least 35,000 fishers and fish processors out of work in more than 500 coastal communities. Since then, Atlantic cod populations have remained low, and some scientists doubt that the fishery will ever recover.

Figure 1.1

Collapse of Newfoundland's Atlantic cod fishery. **Data analysis:** By roughly what percentage did the catch of Atlantic cod drop between the peak catch in 1960 and 1970? (Compiled by the authors using data from Millennium Ecosystem Assessment.) – **SOLVE the Question**



Natural/Superstock

The air, water, topsoil, and living species that make up the earth's life-support system are open-access renewable resources that are subject to the tragedy of the commons. As the human population grows and uses more of the earth's resources, there is growing concern that we can degrade the planet's life-support system for us and other species. This would be the ultimate tragedy of the commons.

In this book, you will learn how the earth's life-support system works, how we affecting this system, and how we can avoid the ultimate tragedy of the commons by learning how to live more sustainably on the planet that is our only home.

1. Define Tragedy of the Commons
2. Explain how the case study you just read is an example of the Tragedy of the Commons.
3. Provide 3 examples of Tragedy of the Commons at your school, neighborhood, or your home.
4. Who was the first one to define the Tragedy of the Commons. What year?