Name:

For many environmentalists, protecting the environment is a matter of ethics, morality, and stewardship. For others, the environment is just one of many daily concerns. And, while many people might prefer a cleaner environment, nearly all economic activity results in some pollution.

So, if society wants goods and services, it must accept some pollution. Less pollution will likely require less production (and consumption) of goods and services, higher costs for firms (and higher prices for consumers), or some combination of the two (see the graph). This highlights the underlying trade-off: A clean environment imposes costs.

Government regulation is one approach to protecting the environment. The government may mandate certain technologies (e.g., catalytic converters for cars or smokestack scrubbers for factories), ban certain goods (e.g., most traditional incandescent light bulbs), or stipulate a target level of efficiency and then let firms determine how they will meet the requirements.1

Such government regulations achieve environmental goals, but in many cases they may not be the most cost-effective or efficient methods of doing so.

Property Rights and Externalities

From an economic perspective, firms that dump large amounts of waste into the air or water are shifting some of their production costs to society. The firms that pollute benefit from paying lower production costs (compared with using cleaner technology or fuels or installing pollution-control equipment). Society bears the costs of pollution through diminished opportunities to enjoy outdoor activities, potential long-term damage to ecosystems, as well as pollution-related health issues and their associated medical costs. Economists refer to this shifting of costs to third parties as a negative externality.

Economists generally attribute the existence of negative externalities to the lack of clear

environmentalist nature-lover
ethics (related to the rules and beliefs of doing the right thing)
stewardship management

catalytic converters (devices in vehicles that reduce pollution)

incandescent glowing
stipulate specifically say

cost-effective (producing a lot for a given amount of money)

pollute (add unwanted things to/make dirty)

diminished reduced

property rights.2 When people own property, they have an incentive to protect it, care for it, and ensure that it lasts. For example, if you owned the air that you breathe, you would likely take action to stop others from polluting it or require compensation for the use of your property.

But when property is not owned--such as air or water in a river--no one has a vested interest to be responsible for its welfare.

The Environment as the "Commons"

William Forster Lloyd wrote about the connection between property rights and externalities in 1832. In the England of his day, herders could graze their animals on lands owned "in common," or essentially by everyone. Lloyd noticed that these areas were overgrazed by animals to the point of barrenness. In economic terms, individual herders benefited from grazing their animals on the common, but the cost to each individual herder was near zero because the common grazing area was shared by all. As a result, the herders kept adding more animals to the common that became overgrazed and unproductive, which was harmful to the entire group.

Lloyd's story is known to economists as the tragedy of the commons. In essence, the herders using the commons were gaining the benefits of their animals' growth, but by grazing their animals on the common, they were shifting much of their production costs to their neighbors collectively. In other words, there was a negative externality.

Economists understand the lesson from the tragedy of the commons: When resources are not owned or the property rights are poorly defined, individuals have little incentive to monitor its use or overuse. In such cases, economists suggest property rights can be granted to ensure custodianship of the resource. However, granting property rights over some resources (e.g., the environment) can be difficult or unpopular. When granting property rights is not feasible or acceptable, the government can act as the custodian.

Economic Solutions to Pollution

According to economic models, firms that produce negative externalities by shifting some of their production costs will produce a greater quantity of the

polluting (adding unwanted things to/making dirty)

vested interest (very big interest)

overgrazed (allowed animals to eat too much grass and plants)
barrenness (lack of producing anything)
benefited from got good things from

collectively all together

resource useful thing/valuable supply

feasible (able to be done)

pollution-producing good or
service than the socially optimal quantity, which (in this context) is the quantity of goods
Federal Reserve Bank of St. Louis 3
produced that takes both the private and social (or external) costs into account. In short, in the
case of the environment, this means that the free market, left alone, will overproduce pollution.
How is this dilemma resolved?
Economist Arthur Pigou was an early advocate of using taxes to correct for negative externalities.
He suggested negative externalities could be reduced by imposing a cost that reflects
the extra cost shifted to society on the producer of the externality. To accomplish this, the government
(acting as custodian) could impose a corrective Pigovian tax (named after Pigou) on
the firm. For example, if a firm's production of widgets shifted $10 of the production cost per
widget to society in the form of pollution, the government (representing society) could impose
a $10 per widget tax on the firm. This action would force the firm to make its production decisions
based on a cost that accounts for the negative externality, which is called internalizing
the externality. Given the higher cost of production, the firm would probably reduce its production
of widgets--and the amount of pollution created. Alternatively, the government could
directly tax each unit of pollution emitted instead of each widget produced, thereby setting a
fixed price for polluting and creating a direct incentive for firms to reduce the amount of pollution
emitted. For example, firms might adopt technology that produces less pollution.
Economists view these types of policies as effective and efficient methods of reducing pollution
because they use market forces and economic incentives to correct for negative externalities.3
They also give firms the freedom to choose the least-costly method of pollution reduction.
In economic terms, this allows firms to "pick the low-hanging fruit" by pursuing the options
with the lowest opportunity cost first. Economists also note that such tax policies create government
revenue, which can be used to reduce other taxes, pay debt, or

imposing a forcing (on people) a

internalizing (making a part of you)

Alternatively, Or,/In a different way,

emitted gave off/given off

fund infrastructure, education,
or social programs.4 This is the underlying concept for many carbon tax policy proposals.
Because taxes require direct payment by firms (and therefore indirect payment by their
customers), some economists consider using tradable pollution permits a more acceptable
alternative.5 In this scenario, the government can issue a specific (total) number of permits,
which are allocated to firms based on a sustainable use of the resource (in this case, the atmo -
sphere). Firms can emit only as much pollution as their permits allow. Because the government
determines the number of permits, it can set a cap on the total amount of pollution emitted.
Firms can buy and sell the permits in an established market at a price determined in the market.
Firms that emit a great deal of pollution must buy permits, and firms that emit less can sell
their permits in excess of those needed to cover their emissions. This provides an economic
incentive for firms to reduce pollution in cost-effective ways. In practical terms, this serves as
a subsidy to firms that use clean energy and production methods and a tax on those that pollute
excessively.6
The total number of permits issued by the government can be reduced over time, thereby
reducing the total amount of pollution emitted. Further, individuals or groups that wish to
reduce pollution can have a direct impact by buying the permits and taking them off the market.
The Clean Air Act Amendments of 1990 used tradable pollution permits to cost-effectively
reduce sulfur dioxide pollution, which was causing acid rain. At the time, the concept of the
government issuing a permit to pollute did not sit well with some environmentalist groups;
many criticized them as "licenses to pollute." The permits were given to firms, and they were
allowed to trade them. This technique, known popularly as "cap and trade," is still controversial,
but the successful use of pollution permits in reducing sulfur dioxide pollution and acid rain
has made them more acceptable.

are allocated are set apart and given out
emit give off

determines decides/figures out

subsidy helping payment

excessively extremely (too much)

Amendments Changes

Tips:

▶ Click the highlighted words to learn them and hear them. Click the non-highlighted words, too.

▶ Change how you learn on the settings page. Also, you can print vocab lists, quizzes, and more.

▶ When you log in, everything you rewordify is auto-saved and can be easily shared.

Note: being rewordified because you selected a Rewordifying Level of *Level 2* or above on the Settings page. For more info, click the *Stats* tab, above. To rewordify all difficult words, click *Settings* and select a Rewordifying Level of *Easiest* or *Level 1*.

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