Coal mining as an example of the Tragedy of the Commons Principle

Consider a modern example that illustrates the Tragedy of the Commons principle. Power companies are constantly besieged by customers complaining of the high cost of energy. Obviously, such a company wants to buy its fuel (for example, coal) as cheaply as possible, so it shops around.

Coal is mined in two different ways: from deep underground and in strip mines. Deep mines are reached through a shaft into the ground, through which miners gain access to the coal seam and out of which comes the coal. Strip mines are used when the coal seam is near the surface. The topsoil and other overburden materials are removed by giant power shovels and piled out of the way. The shovels then dig out the coal. After the coal has been mined, there may be reclamation. This involves refilling the hole, spreading topsoil, and then planting new vegetation on it.

Now imagine three coal companies:

1. X Coal Company mines coal in a deep mine and sells at a price of $35.69 per ton at the mouth of the mine (that is, not including the cost of transportation from the mine).
2. Y Coal Company mines coal in a strip mine to sell at $10.54 per ton, but reclaims the stripped land at a cost of $3.00 per ton. The total cost for Y Coal Company coal is then $13.54 per ton.
3. Z Coal Company mines coal in a strip mine and sells it at $11.17 per ton; it does not reclaim the land.

Clearly, the strip mining company that tears off the overburden, heaps it in unsightly spoil banks, and then leaves everything there without treatment (causing erosion and contaminating ground water with acid leached from the spoil) has an advantage in selling at a lower price. Z Coal Company may sell its coal at $11.17 per ton (including a

handsome profit), while to make the same profit, Y Coal Company has to charge $13.54 per ton. Of course the power company will buy from the Z Coal Company. The transportation costs, averaging $3 per ton in 1968 and $27 per ton in 1990,[69] may be different enough to favor the Y Coal Company or even the X Coal Company. We have *assumed* here that all other costs are equal.[69-71] As an example, the Minnesota Power subsidiary of Allete paid an average of $21.19 per ton in 2000 for its coal, even though the national average cost was much greater.[70]

Imagine the Y Coal Company's next stockholders' meeting. Most likely, the reclamation practices would cease. By presenting examples such as this, environmental groups were successful in convincing the U.S. Congress that outside pressure on strip miners was necessary to achieve reclamation. Congress passed the Strip Mining Act of 1977, which mandates reclamation. Such an approach equalizes costs for all producers and protects society as a whole from greed. Although the Strip Mining Act has not been totally successful, the situation has improved since its passage and the Strip Mining Act has been renewed.

An indirect effect of a strip miner's decision not to reclaim land is the underpricing of coal in terms of its true societal cost, thereby encouraging unnecessary energy use. Cheap energy would be gained at a cost to society as a whole; there is no incentive to curb consumption if energy is too cheap. When energy is underpriced, it becomes advantageous for a builder to construct and sell houses with minimal insulation, because those houses are cheaper for consumers to buy and inexpensive to heat (this actually occurred in the 1950s and 1960s).

Of course, the power companies buying from strip miners who do not reclaim would not see themselves as responsible for the unreclaimed strip-mined land. It was those irresponsible strip miners, after all!