

A Sustainable Environment: Our Obligation to Protect God's Gift

by
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More Efficient Use of Our Natural Capital is Critical to Protecting Our Environment

A few weeks ago, you may have read about a report from an international group of ecologists and economists stating that the world will run out of seafood by 2048 if the steep declines in marine species continue at current rates. The 14 researchers from Canada, Panama, Sweden and the United States spent four years analyzing the available data and published their conclusions in the journal of *Science*. This is just one example of what could happen if we don't manage our natural capital in a more efficient manner.

In a book titled *Natural Capitalism* by Lovins, Lovins, and Hawken, several strategies are recommended for protecting our resources and ecosystems. One of the strategies is to dramatically increase the productivity of natural resources. An example of this strategy can be seen how Interface Corporation, the largest manufacturer of commercial carpeting, designed one of its new factories. Many plants require mixing tanks, heaters, reactors and other pieces of equipment all connected with pipes and pumps. What is typically done by engineering plant designers is to lay out the various pieces of equipment and then to connect them with pipes, usually with small diameter piping. However, an Interface engineer looked at the design and decided to make two simple changes.

The first change was to use pipes with a larger diameter, thus creating less friction than the small diameter pipes and therefore requiring less pumping energy. Although the larger pipes would require more capital, this can be offset by the lower capital cost of the smaller pumping equipment that would be needed. The cost of the pumps, motors, motor controls, and electrical components would fall far more than the rise for the larger pipes.

The second change was also based on how to reduce the fluid flow friction in the pipes and thus lower the energy requirement. The engineer decided to use short and straight runs rather than long ones with many bends. To accomplish this, he laid out the pipes first and then positioned the various tanks, boilers, and other equipment that they connected. These two changes allowed for a reduction of the pump horsepower from 95 to only seven, a 92% reduction. By making design changes to reduce the pump requirements results in capital cost savings as well as operating cost savings.

Another example of natural resource efficiency is to use less paper or paperboard products whenever possible. Baxter International was purchasing plastic bottles shipped in six-ply corrugated boxes. When the company analyzed the initial cost of its waste streams, it requested its supplier to ship in three-ply corrugated boxes. This reduced Baxter's purchasing costs as well as saving many trees when going back to the origin of

the natural resource used for the boxes. If everyone used less writing paper by being more efficient and by printing on both sides of the paper, again there would be major savings of our precious trees.

Building contractors can save a significant quantity of the wood required for structural products by substituting engineered wood products. For a typical tract house, this would reduce the amount of wood needed for a stud wall by about 70%. In addition, these walls would be stronger, cheaper, more stable and with twice the insulation. Consequently, the cooling and heating requirements would reduce the capital cost for the equipment and reduce the electrical cost for operating the furnace and air-conditioner.

If more people would consider these kinds of changes in their business practices, we would be well on our way in becoming a more efficient society with respect to preserving our natural resources.

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