

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

by
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Development of the Circular Economy

Last month, I talked about the development of the sharing economy. The other relatively new sustainability term is the circular economy. While the term is rather new, the concept is definitely not. When I was a young boy over 60 years ago, I would spend time hanging out at my father's restaurant – eating and looking around. I still remember an operation that took place about once a month in the kitchen. My uncle, the chef, would trim fat from whichever piece of meat he needed, beef, lamb or pork. He didn't throw away the fat but rather saved it for my father. Once a month, my dad would place the small pieces of fat in a very large pot, add lye and boil the mixture. He would then let it cool until it became a solid mass. Cutting up this solid white mass into small pieces, he produced soap which was used by the (human) dishwasher. This was my first exposure to a circular economy, making a waste product a feedstock for another product, although it was obviously not known as the “circular economy”.

Much more recently, but still some time ago, I became acquainted with Kalundborg, an industrial park in Denmark that developed a circular economy more for economic reasons rather than environmental. A coal-fired power plant sends its surplus heat to about 3,500 homes as well as to a fish farm whose sludge is converted to a fertilizer. A by-product of the power plant's scrubber is sulfur dioxide which contains gypsum that is sold to a wallboard manufacturer. Fly-ash and clinker from the power plant is used for road building and cement manufacturing. Effluent cooling water from an oil refinery is sent to the power plant for use as raw boiler feed water. The refinery also recovers sulfur which is sold to a sulfuric manufacturing company. All of these systems were created from about 1980 through the early 1990s. In total, there are over 30 exchanges among the partners in Kalundborg.

These are two examples of a system that should be implemented more and more, and sooner rather than later. Today, we are consuming the planet's natural resources at a rate of over one and a half earths, which means by August 8, 2016 we will have consumed all of the earth's resources needed for the entire year of life on this planet. Consequently, it is called Earth Overshoot Day. This overconsumption of goods in this world cannot continue. And in particular we need to develop ways to make more use of the products. The circular economy is an industrial system that is restorative by intention and design for environmental reasons, not for economic reasons, although the circular economy leads to both cost reduction and material reduction. The idea is that rather than discarding products before their value are fully utilized, we should use and re-use them as much as possible. Presently only a few percentage points of the original product value is recovered after use. A good example is the mobile phone. With most people today using a smart phone, we are encouraged to replace it at least every two years. The manufacturers offer improved phones in order to continue increasing sales. However, the old phones, which are still functional, become an unnecessary waste.

We have all become aware of energy efficiency but there is not enough emphasis on material efficiency. With the manufacturing of new products being more efficient and automated, labor requirements continue to decrease. A circular economy, on the other hand, could lead to some social benefits like increased employment since caring for items through repair, maintenance, upgrading and remanufacturing is far more labor-intensive than mining and manufacturing in highly automated facilities.

We must adopt a circular economy, where products are designed for ease of recycling, reuse, disassembly and remanufacturing . This will then replace the traditional, linear “take, make & dispose” model that has dominated the economy since the industrial revolution.