

We can sustainably manage the environment—but we need to work at it

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Plastic pollution washed up on a Pacific Ocean beach. Credit: Kevin Krejci via Flickr

This past week, Veronique Greenwood filed an important report in the [New York Times](#) on plastic pollution in our coral reefs. She summarized

some of the work of Cornell professor Joleah Lamb and her colleagues, which estimated plastic pollution in the Asia-Pacific region. Lamb's research catalogues plastics on "159 reefs in Australia, Indonesia, Myanmar and Thailand. In a paper released in the journal *Science* on Thursday, they estimate that reefs across the Asia-Pacific region are littered with more than 11 billion pieces of plastic larger than 5 centimeters."

The plastics are not only ugly, they attract diseases that can harm reefs, causing them to get sick and die. A key finding from Lamb's study indicates that [plastic pollution](#) varies by nation. As Greenwood reports:

"...The study shows that it is possible to control the impact of plastic on reefs. Countries that take a great deal of care to keep plastic from entering the ocean—like Australia—see notably lower levels of it on reefs, and the problem was worst in those with poor infrastructure for managing waste, like Indonesia."

Healthy [coral reefs](#), like other parts of our biosphere, are important for their own qualities, but also for their connection to other forms of life that ultimately create the environment that allows humans to breathe, eat, and exist. As [Barry Commoner](#) once said: "The first law of ecology is that everything is connected to everything else."

There is a key lesson in the coral reef story that we see repeated constantly in our economy and way of life. Much of the damage we do to the planet can be avoided with management, technology, ingenuity and attention. Some will say that this is an expensive luxury that inhibits [economic growth](#) and is particularly problematic in the developing world. The answer is that it is a question of spending a little bit up front to prevent the problem, or a lot later on to clean up the mess. I hate to be trite, but an ounce of prevention really is worth a pound of cure.

Toxic waste is probably the best example of this principle. Dumping toxics in the water or burying barrels underground spreads toxics throughout the environment, and recollecting those materials costs a lot more than safe disposal would in the first place. General Electric's cleanup of the Hudson River is a dramatic case in point. In 2015 Ted Mann of the [Wall Street Journal](#) reported that the Hudson cleanup cost the company \$1.7 billion dollars, took seven years and removed 310,000 pounds of pollutants. Not only did GE have to pay the cost of the clean-up but according to Mann:

"The river's trustees will make a formal damage assessment that will put a price on what GE owes the state for restoration of resources and wildlife throughout the river ecosystem. Government officials said the company could be asked to pay billions of dollars."

There are countless examples of similar expensive cleanups and restoration efforts now underway throughout the United States and in many other nations as well. It is nearly always the case that cleanups are complex and expensive, while pollution control and materials management are not only less expensive, but often stimulate technological innovations that lead to new products and lower price production of existing goods and services.

Large scale environmental disasters such as the BP oil spill in the Gulf of Mexico, GE's pollution of the Hudson River, the Fukushima nuclear disaster, and the lead in Flint Michigan's water supply capture our attention. But most of the costs of environmental mismanagement come from millions of daily decisions to ignore best practices and hope that no one notices. At its worst, these sloppy practices are justified as a type of "macho" management: "If you want to make an omelet you're going to have to break some eggs." In a planet of 7.5 billion with billions of cameras, drones and global communication, we live in an observed world. The practice of "midnight dumping" of [toxic waste](#) is no longer

simply evil and sloppy, it's stupid—unless your goal is to get caught.

There was a time when waste management was a simple matter of digging a hole in the ground and dumping garbage into the hole. In earlier times, we simply barged municipal garbage out to sea and dropped it in the ocean. In the modern world, there are too many of us, and we produce so much waste that all waste must be reduced, recycled, burned for energy or somehow treated. We are getting better at treating waste and the technology available is increasingly cost effective and efficient. While we produce more waste than we used to, the rate of waste per capita is going down and the amount of waste recycled and treated is going up.

But we can do better, and the coral reef story makes clear how important it is. The goal is to close the system of production and consumption and create a "circular economy" where all materials are re-used rather than discarded. Such an economy will require more energy to move and treat materials, and so as we work to create this circular economy we must also work to transition from fossil fuels to renewable energy.

A sustainable, renewable resource-based economy is both possible and necessary. It is also a process that will take decades to complete. The current political environment in Washington will not advance this goal, but it will not be able to stop it. The president and his Department of Energy secretary are doing their best to kill renewable energy and revive coal and nuclear power, but they are not succeeding. While an enlightened federal government could speed the transition to a sustainable, renewable resource based economy, in the end market forces will drive this change.

A careful, parsimonious approach to material use that limits waste will make a production process more efficient and lower priced. We saw this when Total Quality Management reduced manufacturing [waste](#) in post-

war Japan. As technology continues to develop, energy efficiency and renewable energy will beat other forms of energy on price as well. If we maintain a regulatory structure that punishes companies that release poison into the environment, the effort to reduce risk of environmental liability will also result in cleaner production processes.

Finally, more and more wealth is created in the service economy rather than through manufacturing. In the United States, 80 percent of the GDP is in the service sector. The people who own 80 percent of the economy are not likely to allow those that control 20 percent of the economy to poison them or pollute their air and water. Cities are being retrofitted for sustainability with sewage treatment and other infrastructure designed to reduce our environmental impact. Modern economic and social life has become less based on brawn than on brains. That means that more and more attention will be paid to growing our economy while reducing damage to the planet.

But as we improve our current practices we will need to deal with the awful legacy of the past. Professor Joleah Lamb and her colleagues say that those 11 billion pieces of plastic will soon reach 15 billion. It will not be easy to address problems like this, but the sooner we get started, the better. We can sustainably manage the environment, and promote economic growth, but we need to work at it. And we need to start now.

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