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## Saving the Environment, One Quarterly Earnings Report at a Time

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A few years ago, scientists at Cargill Inc. learned how to make rigid, transparent plastics from corn sugars. There was just one problem: they cost a lot more than the oil-based plastics they would replace.

But that was before the price of oil shot up and companies came under pressure from consumers and investors to find economically sound ways to adopt "green" packaging and other environmentally friendly products and processes. This year, [Wal-Mart](#), Wild Oats Market and many other retailers, as well as food suppliers like Del Monte and Newman's Own Organics, all embraced corn-based packaging for fresh produce.

Sales at NatureWorks, the Cargill subsidiary that makes the plastic, grew 200 percent in the first half of this year over the period last year. "The early adopters were more influenced by environmental concerns than costs," said Kathleen M. Bader, chairwoman of NatureWorks. "But now we're competitive with petrochemicals, too."

Cargill is one of several companies profiting from the concerns - of shareholders, communities and consumers - about global warming, leaking landfills and other potential environmental hazards. Huge companies like [General Electric](#) and [Chevron](#) now have separate businesses to market what they are calling environment-friendly products.

And new companies and university projects appear each day. Cornell University's College of Engineering, for one, expects to have a commercial process for using bacteria to recoup energy from wastewater treatment within three years.

"There are a lot of creative types looking for the next big thing," said Bob Sheppard, deputy director for corporate programs at Clean Air-Cool Planet, a nonprofit environmental education organization. "Well, these days, environment is it."

It is impossible to quantify the size of the environmental industry. Many of the newer companies are privately held. And many "green" products - more efficient power generators, say, or biodegradable plastics - are parts of other industries.

But investors are clearly funneling ever more money into green technologies. Last year, the California Public Employees Retirement System, or Calpers, said it would invest \$200 million in what it called the "burgeoning environmental technology sector." This year, 27 members of the Investor Network on Climate Risk promised to invest \$1 billion in companies with green products.

"The environmental industry is about to take off, as more investors realize that they can reap returns from cleaner technologies," said Dan Bakal, director of electric power programs at Ceres, a coalition of investors and environmental organizations that runs the investor network.

Entrepreneurs say the change is palpable. Northern Biodiesel, a small company in Ontario, N.Y., recently got financing for a plant to turn cooking oils and agricultural waste into diesel fuel. "Banks used to dismiss me as a tree-hugger when I tried to borrow for an environmentally advantaged product," said Bob Bechtold, the company's vice president.

In one sense, the current environmental boon is a replay of the 1970's, when regulations spawned a profitable industry to sell electrostatic precipitators, air scrubbers and other air cleaning devices. New federal rules limiting diesel emissions are spurring sales now, too.

But this time, other powerful motivators are at play. The United States did not sign the Kyoto treaty regulating greenhouse gases, but companies feel pressure to reduce gas emissions to do business comfortably in countries that did sign. Moreover, "people know that regulations will come here, too," said Judi Greenwald, director of innovative solutions at the Pew Center on Global Climate Change, a nonprofit research group.

Even without rules to force their hands, companies are responding to societal pressures to act in an environmentally aware manner. "Investors believe it is simply not acceptable to be environmentally irresponsible," said Abby Joseph Cohen, chief United States investment strategist at [Goldman Sachs](#), which just announced its own comprehensive environmental policy.

Others note that companies can no longer avoid the issue. "Shareholders are pressuring everyone to disclose what they are doing in the environmental arena," said Michael J. Johnston, executive vice president of the Capital Group Companies, a money management firm.

The reasons are as much financial as moral, added Stanley G. Deutsch, a research analyst at Babson Capital Management. "Pension accounting, legal problems, and these days, environmental problems, all can be claims on cash flow," he said.

In many cases, of course, skyrocketing prices of oil and gas have given a boost to clean technologies. [Procter & Gamble](#) is substituting vegetable oils for petroleum derivatives in Tide detergent and Head & Shoulders shampoos, and rivals like Colgate and [Kimberly-Clark](#) are exploring alternative ingredients as well. Wal-Mart is looking at ways to burn used motor oil and cooking grease as fuel.

Even at traditional energy companies, sales of oil substitutes are booming. Eastman Gasification Services, a unit of the [Eastman Chemical Company](#), helps companies turn coal into a cleaner-burning fuel or raw material. David Denton, director of business development, says that sales are accelerating and that Eastman is now exploring ways to make chemicals from petroleum residues, the substances left when sulfur is removed from oil.

[Air Products and Chemicals Inc.](#), based in Allentown, Pa., has been selling refinery hydrogen, which is used to remove sulfur from oil, for more than a decade. But now Air Products is

building six plants, "as many as we've built at one time in our history," said Scott A. Sherman, the company's vice president for energy and process industries.

Mark R. Gulley, an independent analyst who follows industrial-gas companies, is not surprised. "High fuel prices have made refinery hydrogen a hot growth driver," he said.

G.E., too, acknowledges that many products included in its much-promoted "ecomagination" program were developed to enhance energy efficiency. The products are either inherently green (like wind power), 10 percent greener than earlier products (more efficient jet engines) or meet government standards for energy efficiency (new power generators).

The current stable of 17 ecomagination products represented \$10 billion in sales in 2004. Lorraine Bolsinger, vice president for ecomagination, predicts that by 2010, G.E. will be selling \$20 billion of ecomagination-tagged products each year.

"We wouldn't sell anything under the banner of ecomagination if it wasn't green, but there must be an economic component, too," she said.

Still, the appetite for green energy is growing independently of high oil prices. Many new technologies "are tied less to the cost of energy than to the notion of making the world cleaner," said John T. Preston, a senior lecturer on entrepreneurship at the Sloan School of Management at M.I.T.

In fact, much of the research into oil-free products predates the oil price spike. Since 2000, [DuPont](#) has been slowly replacing petrochemicals with ingredients like corn. Today, about 83 percent of its products use petrochemicals; it expects to drive that below 75 percent by 2010. "We are looking at our entire portfolio to see where we can make substitutions," said Thomas M. Connelly Jr., chief science and technology officer.

Similarly, in 2000, Chevron started Chevron Energy Solutions to promote energy conservation products. "We don't see a correlation between the price of crude and our customers' interest in running green facilities," said James C. Davis, the unit's president. For example, Mr. Davis said that he counted as clients many universities whose electric bills had not increased, but who wanted to promote their "green campus" to prospective students, faculty members and donors.

The flip side - avoiding negative publicity - is an equally powerful motivator. CSI Leasing, which leases personal computers, was worried that discarded equipment would end up leaching chemicals into landfills. So last year, Executive Personal Computers, a CSI subsidiary that sells used computers, added a sideline business: collecting used computers from CSI and others, then stripping them into steel, plastic and other components to sell as scrap.

That business will account for about 8 percent of the subsidiary's \$20 million in sales this year. Daniel E. Fuller, its president, predicts that it will provide half of sales in a few years. "No company wants a computer with its serial number showing up in an illegal dump," he said.

Still, the biggest boost to green technologies is the good will bonus that environmental responsibility can confer. Wal-Mart, under fire for some labor practices and facing resistance to

proposed new stores, is rolling out a program, already at 584 stores, to recycle shrink wraps, shopping bags and other plastic items that once went to landfills.

Wal-Mart also has experimental stores in McKinney, Tex., and Aurora, Colo., where it is testing the use of trees and grasses, particularly in parking lots, to absorb carbon dioxide emissions and tainted water; wind and solar energy to generate electricity; use of recycled materials for outdoor pavements; formaldehyde-free store flooring; and ways to recycle construction debris.

The Wal-Mart connection is already putting struggling suppliers on the map. Rocky Mountain Recycling showed Wal-Mart how to use its compactors to sandwich used plastic between layers of cardboard, making it easier to transport. Rocky Mountain carts the bales away, separates the paper and plastic, and sells them separately.

Rocky Mountain now has 140 employees and 26 trucks; before Wal-Mart signed on last year, it had 90 workers and 7 trucks. Rocky Mountain has applied for a patent on the baling process, and plans to license it either to Wal-Mart itself, or to other waste haulers. "In the next three to five years," said Jeffery A. Ashby, sales and marketing manager for Rocky Mountain, "we're going to be a \$100 million company."

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