# Costs, Regulation and a Touch of Corporate Responsibility Put More Green into IT

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The legions of fans who thronged to drop $200 on an iPhone 3G in July probably did not think much about the gadget's fate when obsolescence eventually renders it scrap. But Apple definitely has been. Under pressure from tightening global anti-pollution standards, threat of environmental lawsuits and more awareness of corporate responsibility, Apple and other technology firms are racing to place a "green" stamp of environmental approval on their operations and products.

It's easy to understand why, when one considers the electricity used to run data centers (and keep them air conditioned), the vast quantities of water and toxic chemicals used to make components and the mountain of electronics put out to pasture each year by consumers and businesses.

According to the International Association of Electronics Recyclers, about 400 million units of electronic junk, or "e-waste," is generated annually. Most of it is thought to reside in consumers' closets and basements -- as consumers become more reticent to send their gadgets to landfills, but have no clue how to responsibly dispose of them.

"You hear people say, 'Is this green thing a fad?'" notes Christopher J. Lynch, director of the Wharton-based Environmental Management Assistance Program. He says the last time environmental enthusiasm ran this high was in the early 1990s, when high oil prices from the first Gulf War roughly coincided with the 20-year anniversary of Earth Day. "I think this time around, it's different," says Lynch, who also serves with Wharton and the University of Pennsylvania's Initiative on Global and Environmental Leadership.

With even many former skeptics acknowledging that humans do increase greenhouse gas emissions, there seems to be a longer-term focus on green initiatives, he suggests. As an adviser to private companies through Pennsylvania's Small Business Development Centers, Lynch says more companies than ever are asking now about what they can do to green up their operations. Plus, he adds, "Everyone's dealing with higher energy costs."

Research firm Gartner estimates that at a minimum, 2% of global atmospheric carbon emissions can be traced to the information technology industry, because of the electricity consumed by PCs, servers, cooling systems, telecommunications and printers.

**Changing the Corporate Culture**

Such statistics aren't lost on Bangalore-based IT services firm Wipro Technologies. In June, the 96,000-employee firm launched a companywide initiative called Eco Eye. It calls upon every employee to consider how his or her everyday actions impact the environment. "We firmly believe business cannot be built at the cost of ecology," Wipro chairman Azim Premji said when announcing the plan in June. "It is not sustainable. Ecological sustainability will increasingly be the defining force for society and business globally. Wipro believes ecological sustainability is the right thing to do -- in fact, it is the only way forward."

Among other things, Wipro conducts screenings of Al Gore's global warming documentary, *An Inconvenient Truth*, for employees; female employees are given burlap sacks to discourage the use of plastic bags and to have them serve as "Green Ambassadors" in their circles of social influence outside of the workplace.

"The objective is to create and spread awareness among employees and influence a gradual conversion to eco-friendly behavior," says Swapnil Bhatnagar, a Wipro spokesman.

Using its products to reflect the corporate philosophy, the firm says it has or will launch green data centers; introduce a product called Greenware PCs, which it says is India's first eco-friendly line of personal computers; conduct Earth-friendly product engineering; and start an e-waste disposal service for electronics that have reached the end of their useful service lives.

Why do it? Lynch says companies seem to be acting for many reasons, but a large one is simply increased awareness. There's a greater willingness of managers now to say, "I've got to get on this green bandwagon." Until late last year, small businesses almost never sought out his office on their own, looking for help with efficiency. "In the past, compliance was a driver, but now we've got more interest in 'going green.'"

**A Push from Europe**

Helping to push this wave of eco-enthusiasm along is a standard that most Americans have probably never heard of, but is as familiar as the Clean Air Act among people in technology circles and in Europe. It's the European Union's Restriction of Hazardous Substances directive, which applies to electrical and electronic products for sale in EU member countries. Known as RoHS, and pronounced "ross" or alternatively, "row-haas," the decree

took effect in 2006 and forbids the use of lead, mercury, cadmium, hexavalent chromium and polybrominated flame retardants in electronic products such as computers.

"In Europe, there's more of a willingness to move forward on environmental protection," says Matthew White, a business and public policy professor at Wharton. "Europe has been a whole lot more willing to pay the short-term price." That price, he added, can include higher upfront costs of enacting more aggressive regulation and subjective costs -- such as aesthetic concerns about the placement of wind turbines.

The effects of the European rules have been far-reaching. While no similarly sweeping requirements exist in the United States, U.S.-based companies have made a point to comply with RoHS and to gird for possible future legislation.

The Telecommunications Industry of America, for instance, offers its members a service called EIA-TRACK -- a global bill-tracking service from the Electronics Industries Association that provides members a heads-up on proposed environmental standards. Depending on a company's revenue, annual subscriptions run from $3,000 to $17,500, for which the organization subcontracts an army of attorneys to monitor developing legislation. "They couldn't do it on their own for anywhere near that," says Mike Snyder, a TIA spokesman. "We're seeing that the industry is concerned with environmental matters," says Ellen Farmer, also of TIA. "Companies are heading in a more corporate-responsible direction."

According to Elizabeth Grossman, author of *High Tech Trash -- Digital Devices, Hidden Toxics and Human Health*, the industry has made considerable progress in just the past two years. When her book debuted in 2006, it exposed to the wider public some of the IT industry's dirty laundry, such as e-waste dumping, toxic contamination of water sources during manufacturing and other dangerous practices. "There's actually been quite a bit of movement on the issues," Grossman says. "When people first started talking about this, none of the manufacturers thought producer responsibility would work."

**Life-cycle Responsibility**

"Producer responsibility" is the buzz-term for electronics makers reclaiming their products once they are no longer wanted, instead of placing the burden on the consumer to find a recycling program. In Europe, it's a requirement of doing business. Now, Grossman notes, many makers of electronics include "takeback" initiatives, i.e., manufacturer-supervised recycling as part of the product lifecycle.

That's important, Grossman says, because of the haphazard manner in which electronics have been disposed of in the past. In one common scenario, a U.S. computer "recycler" will accept junked electronics from consumers, businesses and government agencies; this "e-scrap" then gets sold to a wholesale operation, which ships the junk to China, India or

another low-cost labor country. At its destination, unprotected workers in squalid conditions break apart the computers, TVs, printers and other e-waste and recover their valuable components. What can't be salvaged -- such as arsenic and lead-filled monitors -- is piled up and allowed to leach into the soil and the local water supply. The shock value of films such as the Basel Action Network's *Exporting Harm*, which depicted such scenes, placed a spotlight on e-waste.

Grossman says that when the film debuted in 2002 at a conference for electronics recyclers, gasps of surprise came from the crowd, many of whom were unaware the computers they collected and shipped away were causing so much suffering. Now, nearly all of the brand name computer manufacturers assiduously account for recycling done in their names. "I think that kind of primitive materials recovery is still going on," nonetheless, Grossman says. "So much of this equipment is coming from all over the world."

The Greening of IT goes beyond making less-harmful hardware. Firms are looking to clean up their processes and use of resources as well.

Wipro, for instance, tracks metrics such as carbon dioxide emissions per employee and per dollar of revenue, recycling versus landfill ratios and paper consumed per employee. Internet search engine giant Google is going a step beyond, having committed a "green energy czar" to the task of finding a way to create one gigawatt or more of renewable electricity at a price that's less expensive than producing it from burning coal. Google plans to spend tens of millions of dollars each year on its renewable power project, called RE<>

The U.S. EPA estimates that data centers -- the huge warehouses of server computers that process data in bulk, such as those used by Google -- consume 60 billion kilowatt-hours annually, or roughly 1.5% of all U.S. electricity use.

"I wish [Google] the best of luck," says Wharton's White. "This lies a long way from Google's core competency. They only make money one way and that's selling ads."

**Encouraging Consumers to Consume Less**

Analysts, including Gartner, say that as environmental concerns come to be perceived as more pressing by consumers, retail customers will put increasing importance on indicators such as Energy Star labels and a company's "green" reputation as part of their purchase decision-making.

Lexmark, the Lexington, Kentucky-based maker of printers and toner, is encouraging its customers to print less, or at least to print smarter by using double-sided printing. "We view what we're doing as bringing a value to the retail customer," says Tanya Jackson, Lexmark's director of sustainable development. "We have a focused effort on getting our customers to

print less." In addition, the company has lowered its products energy consumption and launched a comprehensive program for reclaiming its used devices, breaking them down to their raw materials and using them to make new products.

The firm also produces an annual "Environmental Sustainability Report," in which it gauges its progress on getting customers to print less and recycle more, and on its use of safer chemicals and more recycled materials. Gartner, which has called the current state of IT-associated waste "unsustainable," believes that half of all IT firms will start issuing similar types of environmental statements by 2010 and that a third of them will place one or more environmental considerations among their top six buying criteria.

IBM says it is spending $1 billion a year on its Project Big Green, an initiative to dramatically cut energy consumption at data centers using its products. A November 2007 survey by the company found that 55% of the small and medium-sized businesses it interviewed worldwide were moving to reduce the energy consumption of their information technology, including buying more energy efficient technology, consolidating servers and benchmarking server performance.

Apple says it's re-examining its entire lineup. One example: It no longer sells bulky lead and arsenic-laced cathode ray tube monitors with its machines. Instead, all Macintosh products ship with slim LCD screens, and the company says it is making a shift to even more environmentally friendly LEDs.

But such claims can be open to interpretation. Environmental group Greenpeace, in its June Guide to Greener Electronics, bruised Apple for, among other things, what Greenpeace judged to be insufficient use of recycled plastics or renewable energy, and lingering questions about Apple's use of toxic chemicals in products.

Apple CEO Steve Jobs responded indirectly to the criticism on his company's web site, saying, "In one environmental group's recent scorecard, Dell, HP and Lenovo all scored higher than Apple because of their plans (or 'plans for releasing plans' in the case of HP). In reality, Apple is ahead of all of these companies in eliminating toxic chemicals from its products."

**Sorting Out the Claims**

To help companies and public agencies separate real green computing metrics from mere marketing hype, the non-profit Green Electronics Council has set up a service called the Electronic Product Environmental Assistance Tool, or EPEAT. The web-based tool assesses desktop and notebook PCs and monitors based on the Institute of Electrical and Electronics Engineers' official environmental performance standard. Last year, President Bush signed an

executive order requiring all federal agencies to purchase EPEAT-certified products for 95% of their computing needs.

A little more than a year ago, the EPA's Energy Star efficiency ratings program raised its energy consumption cutoffs for computer makers who want to put the label on their machines. The more aggressive standard requires computers with the Energy Star label to use internal power sources that are at least 80% efficient. EPA claims that for every 100 computers a business replaces with new Energy Star-compliant models, it will save $175 per year on energy bills and more than $670 over the lifetime of the computers.

Lynch advises that companies wishing to go green, be they IT-related or otherwise, reach for the lower-hanging fruit first, such as upgrading lighting and making sure their facilities are weather tight. "As a general strategy, in terms of environmental impact, the key is efficiency first." The return on investment, he adds, might not be too bad either: "Our clients typically see savings of 20% to 30%."