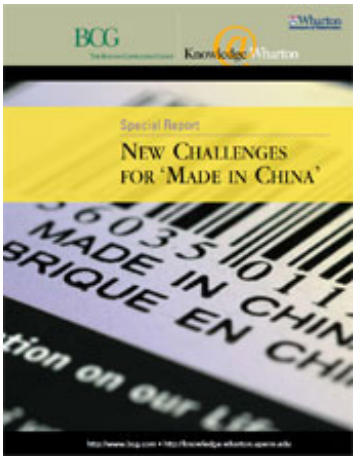
The Dragon Turns Green: China's Manufacturers Adapt to a New Era

Published : June 03, 2009 in Knowledge@Wharton



Ten years ago, the skies over Hong Kong were often blue, according to Wharton management professor Marshall Meyer. "The water was questionable, but the air was clear." Today, the skies are permanently gray -- covered with smog from southern China's factories -- and residents say the only clear days are during the Chinese New Year week, when workers take a rare break for the holiday. "Hong Kong is utterly polluted," Meyer says.

Those busy factories have made China one of the world's most important manufacturing hubs in just two decades. This year, in fact, China is forecast to displace the U.S. as the world's number-one producer of carbon dioxide, one unhappy measure of that manufacturing strength.

Now, some wonder if the country can take much more smog-driven success. Over half of China's shallow groundwater is contaminated, according to the Chinese Geological Survey and seven of the world's 10 most-polluted cities are in China, notes a 2005 World Health Organization study.

In the short run, the global downturn may keep the Chinese sky a bit bluer, but in the long-run, the old idea that the only metric that mattered was GDP growth seems likely to end. For one thing, it's getting expensive -- some analysts estimate that costs associated with environmental degradation shave 12% off total GDP every year. For another, many Chinese are becoming extremely concerned about the environment, which is putting pressure on the local and national governments to change: In 2005 alone, there were 51,000 demonstrations of more than 100 people protesting the contamination of land and water, according to the latest available government statistics.

For manufacturers, the government's gradual shift in emphasis from wanting growth at all costs to growth without a high environmental cost creates new challenges and opportunities. In this article, part of a special report on manufacturing in China, experts at Wharton and The Boston Consulting Group (BCG) weigh in on the government's response to the environmental crisis and what stiffer regulations will mean to the world's biggest shop floor. Who will gain as China cleans itself up? Who will lose? And what opportunities will this historic shift in national priorities create?

A New Priority

Not long ago, environmental issues were a secondary concern at best for regional and national officials. With 1.3 billion mouths to feed, policymakers viewed environmentalism more as an aesthetic nicety than a question of national health.

Part of their attitude may also have resulted from the newness of the concept of environmental regulation to China. Elizabeth Economy, in her book on the Chinese environmental crisis, *The River Runs Black,* notes that historically, the Chinese never had a conception of nature as something to be preserved for its own sake. The Chinese traditionally have shaped the environment to suit themselves, driven in part by the needs of a huge population. Economy notes that historians have found evidence of the strain of high population on the land as far back as the year 700. For hundreds, if not thousands of years, the people of China have tended to go in for huge infrastructure projects, such as immense canals, which often had terrible environmental consequences.

A series of high-profile environmental disasters in the past several years, however, has shifted public opinion dramatically, and the recent headlines regarding Lake Tai illustrate the kind of complex environmental challenge an ecological crisis can create in a densely populated country. Located on the Yangtze Delta in eastern China, Lake Tai's scenery is prized as a tourist destination -- in fact, the islands and mists of the lake have inspired poems and paintings for nearly a thousand years. At the same time, the large but shallow lake (average depth is a little over six feet) is also a key source of water for a large chemical industry, home to a large fishing industry, and the primary source of drinking water for at least two million people.

After years of increasing pressure, the lake finally failed in April 2007 when it bloomed with blue-green algae that fed on pollutants in the water. For 10 days, the two million people who live near the lake, many of them chemical industry workers or rice farmers, had to stop drinking or cooking with tap water. "The pollution of Lake Tai has sounded the alarm for us," said Prime Minister Wen Jiabao shortly after the algae outbreak. To many in the government, crises such as the Lake Tai disaster have made it clear that for the sake of national security and social stability, the government can't continue to choose economic growth over the environment.

Yet there are conflicting signs on whether China is serious about the task ahead. In Lake Tai, for instance, 1,300 chemical factories were ordered shut down. At the same time, however, local officials sent a prominent environmental activist to prison, convicted of corruption charges that defenders say were actually retribution for his long-time campaign to stop the lake's decline. While an extreme case, what happened in the Lake Tai incident also demonstrated a key difficulty companies face with environmental regulation in China: The prime minister and the national regulators say one thing, but local officials charged with enforcing those regulations frequently do quite another, according to observers. As a result, enforcement can vary wildly by province. For example, more than 125,000 megawatts of coal-fired power plants have been built in the countryside, reportedly without obtaining official approvals.

Even when there is no strong conflict, the rules are sometimes vague enough for honest disagreements between the central government and the provinces, and between the provinces and their local companies. Rules can be opaque, warns David Michael, a senior vice president and director of BCG's Beijing office.

Looking Ahead

Most experts seem convinced that in the end the central government will get its way, in part because the concerns of 1.3 billion people can't be ignored forever. "Obviously, over time the people will become more and more conscious of the fact that quality of living does include a clean and beautiful environment," says Pinney. As that shift occurs, manufacturers must watch closely. "You need to be quite active, quite involved in these things," says Michael. For example, companies may need to plan for longer turnaround times as the level of regulation grows. The pace of approvals is also likely to grow more uncertain, Michael adds. "The government's capacity to process these things is still developing."

Where the rules aren't clear, Michael suggests that it's better for companies to do too much instead of too little. "You certainly want to be compliant with all these regulations, but companies should worry about the environment for their own brand risk as well."

The concerns of companies with large, visible brands must extend beyond the environmental impact of their own production and include the impact of their suppliers and vendors. "The buyer has a lot of responsibility for developing suppliers so they are capable ... and making sure they comply with the rules," says David Lee, a partner and managing director in BCG's Beijing office. Major brands such as McDonald's and Adidas already have full quality compliance teams co-located among their vendors.

Foreign companies may need to be particularly careful if they lack the deep political connections of the local companies. One of the biggest concerns is "whether the rules are applied evenly or whether the foreign companies are given a particularly hard time," Michael adds. Pinney cautions that although there is a broad drive to make the government less corrupt and more transparent, local players often have more room to negotiate their way around pollution controls. "By contrast, multinationals have less wiggle room," he says.

Other BCG experts say that whatever home court advantage local players enjoy, it won't be enough to

overcome the economic difficulty of being a low-margin company faced with the task of digesting a huge new cost. Many local players are already operating at such low margins that a major investment to clean up their processes could be extremely difficult. "This is beyond the reach of most Chinese players," says Victor Du, a principal in BCG's Shanghai office.

Others think that cleaner processes won't necessarily mean dramatically higher investments, since cleanliness can reduce waste and inefficiency. "It won't be cheaper; otherwise people would have done it long ago," says Lee, but with some level of savings offsetting the costs, the price for compliance may not be prohibitive. Western companies that already operate within global standards or that have been pushed by investors and regulators in their home markets to maintain those standards abroad will have an advantage, particularly when expensive new technology must be brought in to clean up a problem. Others suggest that China may have a good share of low-hanging fruit to be picked when it comes to energy conservation. One example of this could be energy-recovery processes, which recycle much of the excess heat generated by industrial plants. New technologies in this area are helping to recover wasted energy and convert it into electricity and industrial steam that can be turned back to help power the pants. These recovery processes can cut energy use -- and costs -- by up to two-thirds and provide payback in less than five years.

But new challenges will likely emerge. For some industries viewed as polluters, the government may be less amenable than in the past to expansion proposals. Companies in historically high-polluting industries -- such as metal production or plating -- may have a harder time getting approvals, says Lee, or be unable to buy a new parcel of land. Since the Chinese government is the underlying titleholder of all land, which it typically "sells" under long-term leases, sales are sometimes leveraged as a tool of government planners.

How to Respond

Faced with growing regulatory scrutiny, companies have several strategic alternatives. To avoid environmental liabilities, for example, a company may join an industrial park to share the costs of pollution control with others, Du says. As a temporary measure, companies can move from a coastal province where enforcement is getting tougher, and relocate to an inland province where regulatory enforcement is still relatively lax.

For some, the new scrutiny may actually create new business opportunities. Large, efficient cement producers, for example, may be favored right now as the government tries to shut down dirty, small-scale cement factories. "Every small city in China has its own cement factory, and its own brick factory and its own steel factory, all of which -- because they are so small -- are sub-scale and generate way too much pollution and use way too much energy," says Michael.

The government may come to larger producers and say, "If you can add X capacity, we will shut down at least that much capacity of smaller, inefficient producers," Michael predicts. These mom-and-pop factories might seem like an odd target for government ire, given that there are so many larger factories in China. In fact, they may represent one of today's biggest opportunities for greenhouse gas reduction in the world: China's cement sector accounts for 5% of the world's total carbon emissions, according to World Resources Institute estimates.

Similar fragmentation -- and eventually perhaps, similar opportunities -- exist across many industries. The irony, according to some historians, is that one of the justifications of the Great Leap Forward Campaign, which promoted the development of decentralized industry, was a desire to limit the pollution that had accompanied previous industrial revolutions.

Looking ahead, Pinney also sees a variety of new business opportunities arising as a result of more serious environmental regulation. "Because of the energy subsidies and higher tolerance for pollution, companies haven't had much incentive to adopt new technologies and become more innovative in that regard." That should change in the medium and longer term as domestic energy prices creep closer to the market price. And as incentives for cleaner growth increase, he says, companies will respond.

Similar opportunities for environmental technology transfer may exist outside of China, too. One group, the Berkeley, Calif.-based China Rivers Project, notes that the Chinese are now beginning to export their construction skills in large-scale infrastructure projects, such as dams. While the worldwide economic

slowdown may dampen the need for these projects in the short term, over the long run demand for such work will be strong in many places that are starved for better infrastructure. Many of these projects reportedly don't meet international environmental standards or labor standards, however, and that will create a new set of problems for already beleaguered emerging market governments.

More generally, Lee is confident that Chinese manufacturers will weather the shift toward tighter enforcement of environmental quality. "Yes, there's going to be an impact, but will the impact be prohibitive? I don't think so."