

## Japan's Exposure to Risk

The recent natural disaster in Japan brought to light the fragile nature of the global supply chain. Professor Willy Shih discusses how companies should be thinking about their supply-chain strategy now.

The full cultural and sociological aftershocks of the earthquake in Japan—the worst disaster to hit the country since World War II—are washing like a tsunami across many industries as manufacturers and their customers scramble to replace suppliers disrupted and even closed down by the events of March 11.

Tokyo, and indeed much of eastern Japan, is an epicenter of high-tech manufacturing. But dozens of suppliers in other industries are located in the region as well, and the loss of their production may have far-reaching effects in many economic sectors for years to come.

The disaster is causing many companies to rethink their supply chain strategies, which suddenly seem extremely fragile.

When a natural disaster hits, relief organizations such as the Red Cross and Doctors Without Borders swing into action with crisis-response plans that have been honed, refined, and improved with experience. Not so manufacturers and their complex webs of suppliers, who in many cases lack that same experience or large-scale backup plans. The result: a chaotic scramble resulting in production delays, product shortages, and higher prices.

About 22 percent of the world's 300 mm silicon wafer supply came from the Shin-Etsu Handotai's Shirakawa plant in Fukushima prefecture, and 60 percent of critical auto parts were in the same area, says professor Willy Shih, who has studied the ways that supply chains work and the performance of the factories that comprise them. The area is also a primary supplier of lithium battery chemicals, flash memory, and anisotropic conductive film used in LCD flat panel displays.

"In the race to provide better quality at lower prices, manufacturers picked very narrow, optimized supply chains," Shih says. "They put all of their eggs with one supplier that had the best product at the lowest price."