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Bankrolled and bioengineered, China races to forefront of world's paper industry

At a time when U.S. paper mills are already fighting off death from a digital world, China has become a sudden, potent adversary.

By John Schmid

Milwaukee Journal Sentinel

JIN JILING, China – In silent temperature-controlled labs in a desolate part of Hainan, China's most tropical province, rows of women in medical masks and lab coats clone trees that grow freakishly fast.

The trees have official names, such as APP-22 or DH32-29.

But Wending Huang, chief forester in China for Asia Pulp & Paper (APP), calls them his "Yao Mings," after the towering Chinese basketball star.

The tiny green tissue samples, methodically implanted in petri jars, will become hardwood eucalyptus trees that need only four to six years to reach full height, up to 90 feet or more.

"And then we harvest," said Huang.

Each year, Huang's labs clone 190 million ready-to-plant "cutlings," which APP grows on 790,000 acres of managed timberland spread over eight Chinese provinces. The company cultivates fiber-rich hardwood as intensively as U.S. agribusinesses grow gene-optimized corn and wheat.

The " test-tube" forests have helped undo the longstanding advantage of U.S. papermaking states, where hardwood trees are plentiful but can take up to 10 times as long to reach harvesting height.

What's more, boosted by billions in government subsidies, China has been building massive new mills with automated machines that can produce a mile of glossy publishing-grade paper a minute.

At a time when U.S. paper mills were already fighting off a digital death, China has become a sudden, potent adversary — a threat even greater than the rise of laptops and the iPad.

China came to dominate the manufacturing of electronics hardware and touch-screen technologies by marrying cheap labor with sophisticated engineering and automation. It is able to adopt design changes and adjust to demand shifts virtually overnight.

In a move that has attracted far less attention, China has brought that same approach to paper.

Over the past decade, China tripled its paper production and in 2009 overtook the United States as the world's biggest papermaker.

Paper is an exceedingly unlikely focus. After decimating its natural forest cover decades ago, China lacks a fundamental necessity for printing-quality paper: wood pulp.

So it created the industrial-scale plantations.

And it created the world's biggest and most efficient recycling scheme. It now buys some 27 million tons of scrap paper and used cardboard from around the world each year, then de-inks and re-pulps it for about two-thirds of its own paper and cardboard production.

But that is still not enough for China's needs or its ambition.

China imports the vast majority of virgin timber and processed pulp from around the world — 14.5 million tons last year alone from places like Russia, Indonesia and Vietnam.

It has so disrupted the market that 1.6 million tons came from the United States, where loggers and pulping operators are left searching for new customers when local mills close.

That all has earned the ire of environmental groups, which say China's insatiable appetite for wood pulp is destroying the world's forests. It has drawn the fire of U.S. politicians who accuse China of unfairly subsidizing its mills and dumping paper on the U.S. market, putting operations out of business and an entire industry at risk.

With 20 modern mega-mills spread across China, Indonesia-based Asia Pulp & Paper is at the center of the accusations.

It is an unusual place to find a guy from Wisconsin. Jeff Lindsay, 52, is a 20-year veteran of Wisconsin's paper industry whom APP recruited in 2011 to run its growing portfolio of patents. He now works in APP's China headquarters in Shanghai.

Lindsay points out that paper was invented in China (105 A.D.) and remains a potent national symbol. It is taught in Chinese classrooms as one of the four "great inventions," along with the compass (200 B.C.), gunpowder (850 A.D.) and printing presses with movable type (1313).

"These inventions came from China," Lindsay said. "When people go pointing their finger at the Chinese paper industry or saying we shouldn't be buying paper from China — paper came from China."

The West, he says, is in denial about the competitive edge offered by Chinese science, engineering and ingenuity.

"You can only get so much from an old machine," Lindsay said. "And only so much from your trade tariffs or whatever else you are doing to protect your product from lower-cost products from elsewhere before you eventually have to face the reality.

"You have to innovate to survive in this world."

But China's success is not nearly that simple. It does not explain how a tree can be cut down in the U.S., turned into pulp, trucked to a port, shipped 7,000 miles around the globe and come back as paper less expensive than that produced in the mill a few miles away.

The Washington, D.C.-based Economic Policy Institute estimates the Chinese government doled out at least $33 billion in subsidies to its paper industry from 2002 to 2009 — the period that coincides with its stunning growth. That's more than $4 billion a year, a number that is growing.

There is government support at every step of the process — money to create plantations, import raw materials, build new equipment and power the mills.

Subsidies support 30 percent of the total annual output of Chinese paper mills, according to Usha Haley, a New Zealand economics professor and author of "Subsidies to the Chinese Industry: State Capitalism, Business Strategy and Trade Policy."

She notes that raw materials represent 35 percent of the production cost of Chinese paper: "If the Chinese are buying those at world prices, how is Chinese paper selling at a substantial discount compared to U.S. or European paper?"

To be sure, there are grants, loans and tax breaks in the United States, typically aimed at boosting individual operations. The largest, in effect from 2005 to 2010, was for an alternative fuel known as black liquor, a byproduct of the pulping process.

The subsidy averaged $280 million a year when it was in effect, about 7 percent of the size of the annual Chinese subsidy to its paper industry.

In China, demand for paper has been growing at just over 4 percent a year and is expected to continue for at least five years. As China pushes to modernize, literacy rates are increasing, a new middle class is growing and the publishing-on-paper industry is booming.

German paper-machine maker Voith has built a sprawling campus of assembly buildings, each the size of an airplane hangar, in Kunshan, two hours from Shanghai — an operation dubbed "Paper City."

Voith expects China to add additional capacity in the next few years that will equal the capacity of every paper mill operating in Europe.

Of every 12 paper machines the company builds, nine go to China, three to Europe and zero to the United States, where the last new publishing-grade mill was opened in 1990.

"America is not competitive," said Mingming Liu, the company's CEO in Asia.

To Liu, the prime example of entrepreneurship is not that of Apple's Steve Jobs, but Cheung Yan, a Hong Kong entrepreneur who moved to Los Angeles in 1990, where she created a scrap brokerage to tap into the recycling bins of U.S. homes and offices.

Six years later, Yan's Nine Dragons began to open cardboard mills, then mills that make publishing-grade paper, all across China, fed by the recycled paper that arrives packed into shipping containers, which are unloaded by giant cranes and stacked until they create canyons at China's ports.

The trade imbalance means she can negotiate rock-bottom shipping rates because most containers that freighters carry from the United States back to China each year would be empty if not for scrap paper. Indeed, it is now the largest U.S. export to the world by container volume.

Those ships will return to the United States filled with goods made in China — laptops and tablets, electronics and high-end computers.

And paper.

Emily Yount of the Milwaukee Journal Sentinel contributed to this report.