PricewaterhouseCoopers

Paper and Packaging Market in China

China Risks and Rewards

September 2005

Welcome

This is the fourth in a new series of papers by PricewaterhouseCoopers called China Risks and Rewards. The series examines the impact of China on a number of industrial sectors and includes a look at some key issues of particular importance to companies operating in the Chinese marketplace. Having already published papers on the Chinese agrochemicals, bulk and speciality chemicals and machinery and equipment markets, we shall focus here on the paper and packaging sector. This will soon be followed by the final paper in the series on industrial gases.

China is now the world's second biggest market for paper and paperboard, with sales of more than US $20 billion a year. The potential for further growth is enormous; annual per capita consumption is less than a fifth of the level in the United States, Japan and Europe, but a strong economy and more prosperous lifestyle are rapidly driving up demand. Industry sources predict that by the end of the decade China will need 70 million tons of paper a year – 32% more than it used in 2004. The packaging market is expanding equally fast. It has already reached $37 billion, after two decades of double-digit growth, and is forecast to exceed $50 billion by 2008.

The Chinese government is keen to reduce the country's dependence on imports and has embarked on a massive expansion programme. Its 10th Five-Year Plan (2001-2005) aimed, amongst other things, to increase domestic production of paper and paperboard by 40 million tons a year. In 2004, the government also launched a scheme to plant five million hectares of fast-growing trees and build a number of new pulp mills – in what would represent the largest investment in the history of the paper industry.

Since China cannot afford to finance this restructuring on its own, it has been actively encouraging foreign investment in the sector, with the liberalisation of the rules governing approval of foreign-invested projects and the introduction of tax incentives. Some of the global giants in the paper and packaging industry have already availed themselves of these investment opportunities – in the hope that they will provide a secure foundation for accessing the world's most rapidly expanding market.

However, China is not an easy country in which to do business. It is culturally, politically and legally very different from the West. The competition from domestic paper and packaging producers is also increasing. The government is subsidising the modernisation of some of the largest state-owned enterprises and, as local producers improve, so they are moving up the value chain to make the high-quality goods that were once the preserve of global manufacturers. Many of these domestic producers enjoy significant advantages in terms of costs (including cost of capital). Nevertheless, foreign investors can bring their own special strengths to the marketplace and compete, with the right strategy, organisation and grasp of best practices.

PricewaterhouseCoopers possesses broad experience in serving the forest, paper and packaging industries through its network of over 1,400 professionals located in more than 20 countries. We provide professional services to 50 percent of the world's top 100 forest and paper companies. With 6,000 professionals in China, we offer industry specialisation across a broad line of services unrivalled by any other global business service provider. We use our network, experience, industry knowledge and business understanding to build trust and create value for clients in four areas: corporate accountability, risk management, structuring and M&A, and performance improvement.

For more information about the services offered by the PricewaterhouseCoopers Global Forest, Paper and Packaging Practice, please contact me or one of the regional experts listed on the inside back cover of this report.

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PricewaterhouseCoopers Global Forest, Paper and Packaging Leader

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Market Overview

A Growth Market

An official at the Chinese imperial court is credited with inventing paper in AD 105, when he mixed the bark of a mulberry tree with bamboo fibres and water, poured the mixture onto a piece of cloth and dried the cloth to create a smooth writing surface. Today, the production of paper is a much more sophisticated business and China is the world's second biggest market after the United States.

In 2004, China used 54.4 million tons of paper and paperboard. It manufactured 49.5 million tons itself and imported another 4.9 million tons (net of exports). But annual per capita consumption of paper and board is just 42 kilograms, compared with over 200 kilograms per person in the United States, Japan and Europe, so the potential for growth is enormous. That said, domestic manufacturing of paper relies to a large extent on imported fibre and chemicals – despite considerable research into substitute fibres like bamboo – and this is a source of concern for China's industry leaders. Economic and environmental issues also remain.

The booming economy – up 9.4% in 2004 – has seen living standards rise. The average disposable income is still only some $890 a year, but it is forecast to reach $5,000 by 2018. Moreover, there is a huge discrepancy between the emerging middle class and the very poor. An estimated 450 million of China's 1.3 billion inhabitants live in the cities, and the country is urbanising at the rate of 2.5% a year (three times the speed at which urbanisation is taking place in India). Many of these city dwellers enjoy a much more prosperous lifestyle than their rural counterparts. Indeed, about 50 million of the people based in the industrialised eastern provinces have disposable incomes of over $11,200 a year, measured in terms of purchasing power parity, while about 13 million can afford Western patterns of consumption.

Greater affluence and urbanisation – together with concomitant attributes like better hygiene, wider access to higher education, international shopping facilities, advertising, increasing regulation of packaging and labelling, the modernisation of supply chains and surging exports – have boosted China's demand for paper and packaging. According to the National Bureau of Statistics (NBS), nearly 25.8 billion newspapers, 2.7 billion magazines and 6.5 billion books were published in 2004 alone. Consumption of tissue paper has also risen steadily; it is projected to reach 3.5 million tons this year, up from just 680,000 tons in 1990. Meanwhile, the market for packaging materials has soared to $37 billion, after 20 years of double-digit growth – and increasingly prosperous consumers want packaging that is not only functional but aesthetically pleasing as well.

This is good news for domestic and foreign producers alike. Chinese demand for paper and paper products is growing at an annual rate of about 13%, compared with just 2-3% in Europe and North America. Indeed, consumption of some products, such as newsprint, coated printing and writing paper, boxboard and linerboard, is increasing much more rapidly (see Figure 1). The China Paper Association predicts that, by 2010, the country will need 70 million tons of paper a year.

Figure 1: Production and Consumption of Specific Paper Grades in Units of 1,000 Tons

	Production			Consumption		
	2002	2003	2004	2002	2003	2004
Newsprint	1,850	2,070	3,000	2,040	2,410	3,100
Uncoated printing & writing paper	9,200	9,600	10,200	9,370	9,730	10,450
Coated printing & writing paper	1,800	2,400	3,000	2,760	2,980	3,580
Tissue paper	3,100	3,470	3,840	2,970	3,280	3,610
Packaging paper	4,000	4,800	4,700	4,290	5,040	4,960
Boxboard	4,600	5,500	6,700	5,360	6,450	7,720
Linerboard	6,000	6,800	8,300	7,250	7,960	9,560
Corrugating medium	6,000	6,700	8,100	7,300	8,020	9,210
Specialty paper	700	800	850	1,080	1,090	1,140

Source: China Paper Association

China's Timber Shortage

China has implemented six major afforestation projects since 1998. It has also introduced stringent controls on illegal logging and actively encouraged private investment. More than a fifth of the nation's forests have been planted by the 170,000-plus private companies engaged in forestry-related activities.

This policy has paid off. The sixth survey of China's forestry resources conducted between 1999 and 2003 shows that its forest coverage has now reached 175 million hectares, including almost 1.6 billion cubic metres of harvestable forests. However, the percentage of land mass covered by forests is still only 18%, substantially lower than the international norm of 30%. Moreover, it is not nearly enough for China's needs. Environmental group WWF estimates that the country will have to import 125 million cubic metres of timber a year by 2010.

A Fragmented Manufacturing Base

The Chinese paper industry is already one of the largest in the world; in 2004, it generated net earnings of $1.2 billion on sales of $24.3 billion[1]. However, it suffers from four specific problems: a very fragmented manufacturing base, with many sub-scale and outdated producers; shortage of raw materials; relative dearth of natural resources like water and energy; and environmental pollution.

China's State Environmental Protection Administration (SEPA) has closed at least 7,000 pulp and paper mills since 1997, in an attempt to reduce pollution. Even so, the China Paper Association estimates that there were about 3,500 paper and board mills in China in 2004, compared with just 600 paper and board mills in North America. The government now plans to shut another 1,800 mills with a capacity of less than 17,000 tons a year and upgrade some of the larger paper mills in north and north eastern China. But the old State collectives still account for about 45% of domestic production, and are expected to account for a substantial share for many years to come.

Shortage of Raw Materials

China is also desperately short of wood pulp – one of the key ingredients in the paper manufacturing process (see sidebar on **China's Timber Shortage**). In 1998, serious flooding occurred along Changjiang in the south and Nenjiang in the northeast. Over-felling of timber in the upstream native forests was said to be one of the causes of the disaster. Later in the year, the government therefore banned all timber felling in native forests, forcing the pulp and paper industry to rely solely on plantations

Figure 2: Fibre Structure in Overall Papermaking Furnish in Units of 1,000 Tons

	1990	1995	2000	2001	2002	2003	2004
Total P&B production	13,919	24,000	30,500	32,000	37,800	43,000	49,500
Total pulp consumption, of which:	13,933	22,320	28,365	29,800	32,955	39,100	44,550
Wood pulp	2,037	2,900	4,950	6,900	7,405	8,200	9,700
Non-wood pulp	7,971	11,820	11,150	9,800	11,100	11,700	11,800
Secondary fibre	3,924	7,600	11,400	13,100	14,450	19,200	23,050

Sources: 2003 Almanac of China's Paper Industry, China Paper Industry 2004 Annual Report

[1] All currency conversions are based on an exchange rate of 8.2765 Chinese yuan to the US dollar.

Figure 3: Chinese Imports of Pulp, Waste Paper and Paper & Paperboard in Units of 1,000 Tons

	2002	2003	2004	Change (2002 – 2004)
Market pulp	5,265	6,030	7,320	39.0%
Waste paper	6,873	9,380	12,300	79.0%
Paper & paperboard	6,369	6,350	6,140	-3.6%

Source: China Paper Association

for its pulpwood needs. However, the existing plantations can only provide about 8-10 million cubic metres of pulpwood a year.

Like other nations that are poor in forest supplies, China has long used alternative sources such as wheat and rice straw; in fact, non-wood fibres currently account for nearly 85% of the pulp it produces. But the quality of paper and paperboard made with non-wood fibres is not nearly as high as that made with wood pulp, and the proportion of non-wood based fibres is declining. By 2004, it represented just 26% of the overall fibre requirement – down from more than 57% in 1990 (see Figure 2 on previous page). This trend is expected to continue, placing even greater pressure on China's scarce wood pulp supplies.

Conversely, use of secondary fibre has soared. In 1999, the government decided to remove the customs tariffs on wood pulp and waste paper imports, in an effort to stimulate local production. Over the next five years, the share of paper and paperboard made from secondary fibres rose from 40% to 52%.

China has stepped up its recovery programme and now recycles more than 14 million tons of waste paper every year. It imported another 12.3 million tons in 2004 – making it by far the world's biggest buyer of recovered paper (see Figure 3). The United States currently provides about 60% of the total, although Japan increased its share of the Chinese waste paper market in 2004. However, competition for recycled paper is growing, both from US paper manufacturers and from mills elsewhere in Asia, such as India, Indonesia and South Korea.

Wood pulp imports have also rocketed, since the elimination of import tariffs. According to the General Administration of Customs, China imported 7.3 million tons of wood pulp in 2004 – more than twice the amount it imported in 1999. That, in turn, has pushed up prices. The benchmark northern bleached softwood kraft pulp was selling at about $680 per ton in June 2005, compared with an average of just $452 per ton four years ago. Even so, Chinese demand for imported waste paper and wood pulp is likely to keep growing rapidly for at least another five years – and although increasing consumption of secondary fibres has prevented prices from rising as steeply as they might otherwise have done, the central government is well aware that the cost of imported raw materials will continue to climb.

Lack of Water and Energy

China's dearth of water and energy is yet another drawback. The unprecedented speed with which the country is developing has left it with one of the worst water shortages on the planet (see sidebar on **The Chinese Drought**). It is also more wasteful in its use of water than most other nations. The *China Daily* reports that China consumes an extra 135,000 cubic feet of water for every $10,000 it adds to its GDP – four times the world average.

The pressure on China's energy resources is equally severe. It is now the world's second largest consumer of energy, accounting for 12% of global consumption. But demand has been rising at 15% a year for the past two years, and China uses more energy per unit of GDP growth than is typical. Government sources predict, for example, that it will consume an annual 2.2 billion tons of coal by 2010 – 330 million tons less than the 1.87 billion tons it is then expected to produce.

These problems have already taken their toll of Chinese industry. Last summer, 24 of the country's 30 provinces imposed power brownouts and 6,000 companies in Beijing were ordered to give their employees a week off to ease the pressure on electricity supplies. In all, the Asia Exploration Bank estimates that power shortages caused economic losses of $37 billion in 2004 – and some of China's most attractive manufacturing locations, like Shanzen and Dongguan, are losing their appeal as a result of chronic energy shortfalls, which are forcing plants to shut down for several days a week or work at night and close in the day.

The central government has responded by raising the official price of water and introducing a new energy strategy which emphasises the importance of energy efficiency and conservation, and sets specific targets for energy savings. It is now considering plans to lift the price of electricity, in line with its "coal-cost-pass-through" policy – and industry sources estimate that the increase could range from about 12¢ per kilowatt-hour to as much as 36¢ per kilowatt-hour in the coal-dependent eastern provinces.

The government has also initiated a vast building programme. The construction of the Three Gorges Dam will eventually produce 85 billion kilowatts of electricity a year. An ambitious $59-billion scheme to divert water from the Yangtze River to the drought-ridden northern regions is likewise underway. But China has yet to raise the capital to finance many of its infrastructure commitments, which include new high-speed railroads, high elevation railroads, 40 nuclear power plants and numerous other hydroelectric projects. Furthermore, even if all these projects are financed, it will be many years before they are completed – and it is doubtful that they will be enough to meet China's future water and energy needs. If the economy quadruples by 2020, as the National Development and Reform Commission (NRDC) recently predicted, shortages of water and energy could prove a long-term constraint.

The Chinese Drought

China's annual per capita water supply is only a quarter of the global average, according to the World Bank. More than 100 cities have inadequate water supplies; over 300 million rural Chinese lack any source of water fit for drinking; and hundreds of thousands of people are affected with various diseases from drinking water that contains too much fluorine, arsenic, sodium sulphate or bitter salt.

Environmental Pollution

China's lack of water has been compounded by its problems with environmental pollution – and the domestic pulp and paper industry is a major source of industrial contamination. It typically uses large quantities of water and numerous toxic chemicals, including chlorine compounds and solvents for bleaching and delignifying the pulp and biocides for preventing bacterial growth in the finished product.

The most modern factories employ waste treatment systems that reduce the damage these toxins cause. But many of China's small pulp and paper mills are very antiquated and China is therefore seeking assistance to finance such systems. Even those that make the initial outlay rarely use the equipment, because it is expensive to run. Moreover, non-wood fibre produces pollutants that are particularly difficult to treat. Conventional wood pulping alkaline recovery systems are ineffective in treating the black liquor produced in the course of making wheat and rice straw pulp because it is high in silica and very viscous.

The conflict between the interests of the pulp and paper industry and agriculture came to a head in 2002, when northern China suffered its most serious water crisis since Communist rule was established in 1949. Two-thirds of the nation's croplands lie in the area north of the Yangtze basin, but prolonged drought and environmental pollution devastated 20 million hectares of farmland.

In January 2003, the government accordingly introduced a new law to monitor environmental pollution and encourage cleaner production. However, SEPA, the agency responsible for supervising environmental issues, has limited powers and the provincial authorities have often succeeded in resisting national initiatives to close down inefficient, dangerous and polluting facilities in other primary industries like steel and coal.

Nevertheless, some local governments have also started clamping down. Xi'an, the capital of northwest China's Shanxi province, is one such example. It recently announced that it will not approve the construction of any additional paper mills and that those which already exist must adopt tighter standards for sewage water discharge this year. But though similar policies with regard to the manufacturing of pesticides and other chemicals have helped to clean up some of the larger cities, they have also pushed such industries into second-tier areas where enforcement of the environmental laws is less robust. So Beijing may ultimately put pressure on the biggest paper producers to consolidate and become super-companies.

The Government's Development Policies

Despite these difficulties, the central government is keen to promote China's pulp and paper industry – and thus reduce its reliance on imports. In its 10th Five-Year Plan (2001-2005), Beijing set ambitious targets for increasing domestic production of pulp by 2.2 million tons and domestic production of paper and paperboard by 40 million tons. The State Development and Planning Commission (now the NRDC) designated 42 pulp and paper projects across China's six regions for the development of wood fibre, pulp production and high-grade papermaking facilities.

In February 2004, the NRDC launched an even bigger scheme to improve China's forest coverage and paper manufacturing capacity. It aims to plant five million hectares of fast-growing trees in the south eastern coastal areas, build three or four large pulp mills near these new plantations and construct several small bamboo pulp converters in southwest China. The $24 billion investment programme – the largest in the history of the paper industry – is expected to boost domestic pulp capacity by another 5.5 million tons a year (in addition to the 2.2 million tons specified under the 10th Five-Year Plan) by the end of the decade.

The Importance of Foreign Investment

China cannot afford to finance this massive expansion on its own: hence the importance of foreign investment. In March 2002, the NDRC included wood-based development for pulp and paper processing, large chemical and mechanical pulp projects, and high-grade paper and paperboard on the list of industry sectors in which the country welcomes foreign investment through joint ventures. (Newsprint was excluded to protect the interests of local producers.) It has also explicitly invited overseas investors to support its new afforestation programme.

This change of policy has elicited a surge of foreign interest in the Chinese pulp and paper sector. Many of the industry leaders – including Finland's Stora Enso and UPM, Japan's Oji Paper, Indonesia's Asia Pulp and Paper (APP) and South Africa's Sappi – have now established a Chinese presence. Indeed, the China Paper Association reports that foreign paper manufacturers collectively accounted for 28.6% of the $24 billion the Chinese paper industry generated in sales revenues in 2004.

The opening up of the Chinese paper industry should ultimately benefit both China and its investors. Foreign financing of modern mills equipped with the latest technologies and waste treatment systems will help to ease the domestic paper shortage, especially the rising need for high-quality products, and reduce environmental pollution. It will also enable foreign investors to increase their margins by capitalising on the country's cheap labour, and to avoid the customs tariffs which apply to all imported paper products (as distinct from pulp and waste paper). These were reduced in January 2005, but are still an average 4.6%.

The industrialised east coast is home to some of China’s biggest paper manufacturers. Shandong is especially important; it accounts for 21% of the country’s paper production.

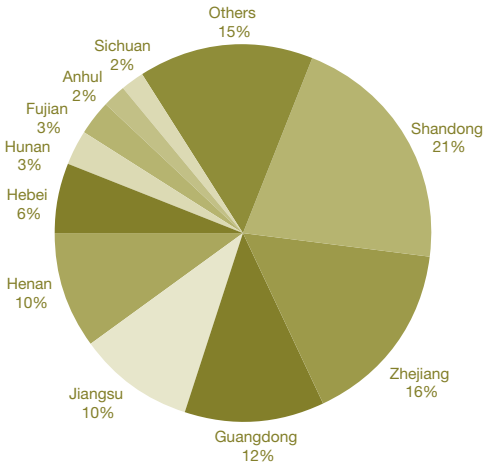
Paper and Paperboard

Key Domestic Manufacturers

China's paper and paperboard market is concentrated in the urban areas. Major cities such as Shanghai and Beijing consume huge amounts of printing and writing paper, tissue paper, cigarette wrappers and containerboard; in fact, Shanghai's per capita consumption is now 176 kilograms a year, over four times the national average. Conversely, many residents in the rural areas do not even use toilet paper.

For obvious reasons, then, the industrialised east is home to some of the country's biggest paper manufacturers. Shandong has proved especially popular, partly because the provincial government is keen to develop the local economy and has proved more entrepreneurial than those in other provinces to the northeast (see Figure 4).

Figure 4: Key Paper and Paperboard Production Provinces in China



Source: China National Statistics Bureau

The leading local producer is Shandong Chenming Paper Holdings, which produces a range of paper grades (see Figure 5 below). Founded in 1958 and listed on the Shenzhen Stock Exchange, it is now mainland China's 93rd largest company, with a production capacity of over 1.5 million tons a year and sales of more than $1 billion in 2004. Shandong Chenming epitomises many of the trends in the Chinese paper industry. It has two of the most modern machines in the world running alongside several old machines that produce low-quality paper for domestic consumption. It is currently building a new mill with a capacity of 250,000 tons a year and, even though rising raw materials costs have reduced its profitability, it expects net profits to increase in 2005.

Huatai Paper and Shandong Bohui Paper are also growing fast. Huatai Paper, which produces newsprint, fine paper, special printing papers, coated board and tissue, aims to double its existing annual capacity of 800,000 tons over the next few years, and has already commissioned a new machine for its mill in Dongying City, Shandong province, which is scheduled to start running in the final quarter of 2005. Similarly, Shandong Bohui Paper, which makes ivory board, writing paper and kraft liner board, has installed a new production line that will increase its output of ivory board by over 50%. It hopes to expand its overall capacity to one million tons a year by 2010.

Meanwhile, Sun Paper, China's largest privately-owned paper company and the market leader for high-quality coated board, has rebuilt three board machines and installed two new production lines. It is now considering plans for another paper machine and has commissioned a new finishing line which will bring annual capacity at its mill in Yanzhou City, Shandong province, to well over one million tons a year.

Several large paper producers in other parts of the country have also been investing heavily in the modernisation and expansion of their plant. Take Yueyang Forest & Paper Group, based in Hunan province: with substantial government assistance, the state-owned enterprise has transformed itself into one of China's leading paper producers and has its eyes on first place. It has four paper manufacturing subsidiaries with a combined capacity of 550,000 tons a year, and has just installed a new machine at its mill in Yueyang City which it claims is the most advanced in Asia. It hopes to build another board mill, two pulp mills and a packaging paper mill over the next five years, bringing annual production to 1.8 million tons. In addition, it is planting 100,000 hectares of forest to secure its supply of wood in the longer term.

Figure 5: The Top Ten Paper Companies in China (Ranked by Sales)

Company Name	Sales in 2004 ($ millions)	Production in 2004 (000 M/T)
Shandong Chenming Paper	1,036.04	1,440.00
Gold East (Jiangsu) Paper	767.39	1,300.80
Huatai Paper	617.17	768.20
Dongguan Nine Dragons Paper	584.02	1,699.20
Shandong Sun Paper	493.70	879.00
Shandong Bohui Paper	471.28	600.00
Shandong Tralin Paper	385.83	341.50
Tiger Forest & Paper	362.48	550.00
Ningbo Zhonghua Paper	307.16	537.70
Lee & Man Paper	278.61	870.00

Source: China Paper Industry 2004 Annual Report

Government funds have likewise played a part in the restructuring of Ningxia Meili Paper, which is based in the autonomous region of Ningxia, bordering Inner Mongolia. Over the past four years, Ningxia Meili has invested in two new 40,000 tons/year machines at its mill in Zhongwei. It is now planting some 14,000 hectares of fast-growing trees in the Tengger Desert and has commissioned a 300,000 ton/year cartonboard machine for a greenfield site, which should come on stream towards the end of 2005.

In short, China's prime paper producers are aggressively expanding, investing in modern technologies and breaking into new product areas. Much of the country's paper manufacturing infrastructure may be old and inefficient, but the industry leaders are fast building high-grade facilities.

China's top 30 domestic paper manufacturers produced nearly 14.8 million metric tons of paper and board in 2004 – 30% of the country's total output.

Foreign Investors in Paper and Paperboard

Foreign paper manufacturers have also been ploughing billions of dollars into China, as they battle for a slice of the world's most exciting market. APP has invested over $4 billion in a pulp factory, 13 paper manufacturing and processing plants, and extensive plantations in the provinces of Guangxi and Yunnan, making it by far the largest paper producer in the country. It now plans to expand the pulp and paper plant on Hainan Island which it opened in the first quarter of 2005, bringing its total capacity to about three million tons a year by the end of the year.

Meanwhile, Oji Paper hopes to consolidate its presence in Jiangsu province with the construction of a new $1.7 billion pulp and paper mill in Nantong City, in addition to the paper plant in Suzhou which it bought from Procter & Gamble in 2002. The first phase of the project will comprise a 600,000 ton/year coated printing paper machine, which is due to start up by the end of 2006.

Foreign paper and board producers have ploughed billions of dollars into China, as they battle for a slice of the world's most exciting market. By 2004, there were 259 Sino-foreign joint ventures and fully foreign-invested enterprises in the country. They collectively accounted for some $6.9 billion in sales; $743 million in pre-tax profits; and $480 million in net earnings.

Stora Enso and UPM have also established local production facilities. Stora Enso has spent about $260 million on a core factory in Hangzhou, Zhejiang province, and a coated fine paper factory in Suzhou, in which it has an 81% stake. It invested another $150 million in a eucalyptus plantation in southwest China's Guangxi Zhuang Autonomous Region and announced, in October 2004, that it is considering plans to set up a newsprint operation with Huatai Paper.

Similarly, UPM has a paper mill in Changshu, Jiangsu province, about 100 kilometres from Shanghai, with an annual output of 370,000 tons. It is currently adding a new line to boost capacity to 800,000 tons a year; investing in another factory, which will produce industrial wrapping materials; and opened a new plant making siliconised release liners in a joint venture with China Fuxing Pulp and Paper and Guangdong Finance Investment Holding Corporation in Guangzhou in November 2004.

Sappi also made its first investment in China in November 2004, when it joined forces with Shandong Chenming and Jiangxi Paper Industry to build a paper plant in Nanchang, the capital of China' south eastern Jiangxi province. South Korea's Shinmoorim Paper Manufacturing and the International Finance Corporation (the World Bank's private sector arm) both hold a small stake in the $172 million project.

Overseas companies have even succeeded in breaking into the newsprint business, where foreign investment is usually prohibited. In September 2003, PanAsia Paper (a joint venture between the world's two largest newsprint manufacturers, Abitibi Consolidated of Canada and Norske Skog of Norway) secured permission to enter into a 65-35% joint venture with LongTeng Corporation to build and operate a newsprint mill in Hebei province, some 280 kilometres southwest of Beijing. PanAsia Paper has since increased its stake to 80% – and the plant, which started up in June 2005, will lift its annual newsprint output in China to 470,000 tons, making it the country's leading newsprint producer. As a footnote, Abitibi Consolidated announced in September 2005 that it is selling its 50% interest in PanAsia Paper to Norske Skog, giving the Norwegian company full control of the business.

Some of the global giants in the paper industry have already invested heavily in China. They have even succeeded in breaking into the newsprint business, where foreign investment is usually prohibited.

Packaging

Many of the biggest domestic and foreign paper manufacturers are also involved in the production of packaging – and here, too, the outlook is very promising. Industry sources predict that the Chinese market for packaging products will reach more than $50 billion by 2008, an 80% increase in the space of seven years (see Figure 6).

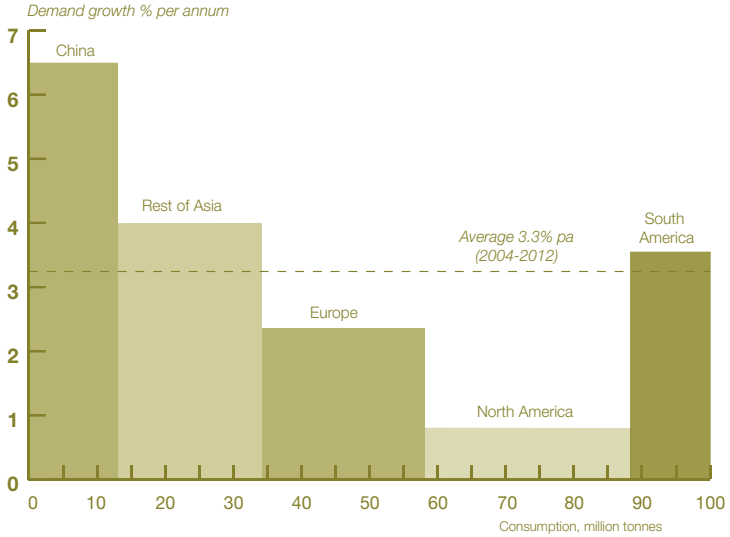
The main materials used for packaging are paper, plastic, metal and glass. Production of paper and plastic packaging is growing especially rapidly. China's limited refrigeration capacity has also encouraged the development of aseptic packaging, and it is currently localising the supply of complex laminates for packaging a wide range of foods, beverages and other perishable products.

Paper Packaging

The increase in the transit packaging sector has boosted China's hunger for paper packaging dramatically. In 2004, Chinese trade with the rest of the world reached $593 billion. Amongst other things, it exported some $130 billion worth of electrical machinery; $55 billion worth of clothes; $17 billion worth of furniture; and $15 billion worth of footwear. As China becomes the workshop of the world, so demand for corrugating materials is rising; it is expected to grow at an average 6.5% a year for the next seven years – far more than the rate of increase in North America – although rapidly expanding domestic capacity could put pressure on prices (see Figure 7).

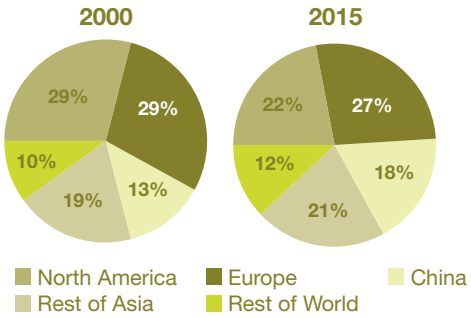
Greater consumerism has also increased the amount of cartonboard packaging China uses (see Figure 8). It now spends about $450 billion a year on consumer goods – and some industry analysts predict that this figure will double by 2010, as disposable incomes rise. Several sub-sectors have already proved particularly dynamic. The shrinking proportion of drugs provided by the State via hospital dispensaries has, for example, created new retail channels, with a corresponding surge in demand for different types of packaging. So, too, has the mounting interest in health and beauty products. Meanwhile, the Chinese predilection for cigarettes has driven demand for flexible paper packaging; with 350 million smokers, it is the world's largest market for tobacco.

Figure 7: Projected Global Demand for Corrugated Materials (2004-2012)



Sources: Stora Enso & Jaakko Pöyry Consulting

Figure 8: Global Demand for Cartonboard



Source: Jaakko Pöyry Consulting

Figure 6: China's Packaging Products Output Value (US $ Billions)

	Actual				Forecast			
	2001	2002	2003	2004	2005	2006	2007	2008
Paper	15.58	17.12	18.81	20.67	22.72	24.76	26.99	29.42
Plastic	3.62	4.07	4.57	5.14	5.78	6.41	7.12	7.90
Glass	5.41	5.76	6.12	6.51	6.93	7.35	7.79	8.25
Metal	2.21	2.40	2.61	2.83	3.08	3.33	3.59	3.88
Others	1.66	1.67	1.68	1.69	1.70	1.71	1.72	1.73
Total value	**28.48**	**31.02**	**33.79**	**36.84**	**40.21**	**43.56**	**47.21**	**51.18**

Source: China Packaging Technology Association

Plastic Packaging

Demand for plastic packaging has also soared, thanks to the growth of the Chinese packaged food market, which is now worth about $39 billion a year. Between 1996 and 2001, for example, production of polyethylene terephthalate (PET) plastic bottles rose from three billion to 90 billion units, with the increasing popularity of carbonated drinks and the use of PET in tea and beer packaging.

Consumption of flexible plastic packaging has likewise risen, with the proliferation of convenience stores, supermarkets and hypermarkets in urban China, replacing the traditional "wet markets" in which food is scooped from bins. According to research conducted by Euromonitor, the use of such packaging for bakery products and staples like noodles and rice contributed to a 49% rise in the market between 1998 and 2002. However, the potential is far greater. Flexible plastic packaging is a cheap and effective means of increasing the shelf life of perishable foods – and as much as 30% of the 400-million odd tons of fruit and vegetables China produces every year is damaged or destroyed during transit as a result of unsuitable packaging.

Lastly, China's growing share of the global market for consumer electronics has created a huge appetite for shock-absorbing, protective foam packaging (as well as specially coated card stock). And materials such as high-density polyethylene and polypropylene – which are more flexible, more heat-resistant and better able to resist infiltration than older forms of plastic – have extended the application of plastic packaging to medicines and cosmetics.

All these factors have helped to ensure that plastic packaging has a promising future, but supplies of some products, such as biaxially oriented polypropylene (BOPP) film, which is widely used as a substrate for multiple packaging materials, are now in danger of outstripping demand. Between 1997 and 2002, the Chinese market for BOPP film rose 103%, but domestic capacity rose 157%. China is expected to add another 78% of capacity by 2007, prompting fears that many producers will need to become more active on the international stage to remain viable.

Glass Packaging

Demand for glass packaging is much lower than it is for paper, although it still outranks that for plastic packaging and is forecast to do so for some years yet. It is used mainly for packaging pharmaceuticals, food and beer; lager accounted for 77% of all glass bottles used to hold alcohol in 2002, primarily because the bottles are washed and re-used, and consumers are reimbursed for the bottles when they return them. But the key growth area is the market for premium-quality cosmetics and toiletries. According to Euromonitor, glass packaging of facial moisturisers and anti-aging products more than doubled between 1998 and 2002.

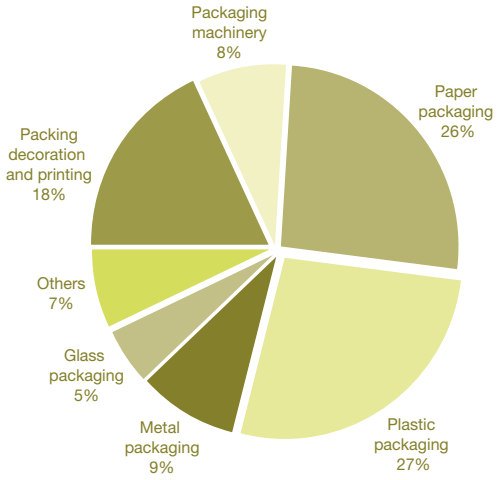
Metal Packaging

Unlike Western markets where metal packaging typically accounts for a larger share than glass, metal accounts for just 8% of China's total packaging output value. The food and beverage industry is the largest market, but canned food and drinks are relatively unpopular amongst the Chinese. Capacity is therefore outstripping demand, especially as plastic bottles also become more commonplace. Moreover, the raw materials are expensive; the rolled stock for manufacturing aluminium cans has to be imported (because domestic producers cannot meet the necessary quality requirements); and the processes are polluting. So the central government is restricting future expansion; it will not, for example, authorise new facilities for producing aluminium pop-top cans.

Key Domestic Players in the Packaging Sector

China has 34,578 packaging enterprises employing more than three million people, according to the China Packaging Technology Association. About 9,000 companies make paper packaging; 9,300 make plastic packaging; 3,100 make metal packaging; and 1,700 make glass packaging (see Figure 9). The vast majority of these producers are very small.

Figure 9: Sector Breakdown of China's Packaging Industry



Source: China Packaging Technology Association (split based on membership of CPTA)

However, there are several notable exceptions. Lee & Man Paper is one of the largest domestic containerboard producers, with a total capacity of about 650,000 tons a year. It also specialises in linerboard – and is well placed to benefit from any new market opportunities arising from the Chinese government's recent decision to impose punitive import charges on linerboard shipments from various countries, based on preliminary evidence of "dumping".

Ningbo Zhonghua Paper manufactures cartonboard for a wide range of products, including shoes, wine, cigarettes and cosmetics. It has invested more than $420 million in new production facilities since 1994, and now has a total capacity of about 480,000 tons a year. And Anhui Shanying Paper is the biggest packing cardboard and paper box manufacturer in south eastern China's Anhui province. It has a mill in Maansham City with an annual capacity of 450,000 tons, as well as four box plants with a combined capacity of 20 million square metres a month.

A handful of domestic producers also dominate the plastic packaging scene. China Flexible Package Holdings is the country's biggest manufacturer of BOPP film. It has recently diversified into synthetic paper and five-layer high barrier film for packaging raw meats, and expects to boost its turnover to $112 million this year.

Other major plastic packaging producers include Zhuhai Zhongfu and Zijiang Group, the two leading manufacturers of PET preforms and bottles. Zhuhai Zhongfu supplies Coca-Cola and Pepsi-Cola with about 70% of their local needs, via subsidiaries in 19 provinces and cities. Zijiang Group, which specialises in hot-fill products and also serves many of the multinationals, has 34 subsidiaries.

Meanwhile, Shanghai Zijiang Metallization Packaging Material Company is the largest domestic manufacturer of vacuum metallized packaging materials. And Tianpeng Aluminium in central China's Henan province is one of the main foil manufacturers. It recently invested over $36 million in a new plant to make foil for packaging medicines, air conditioners and general use, which is scheduled for completion in March 2006. But China's packaging industry leaders are still much smaller than the multinationals.

Foreign Investors in the Packaging Sector

One of the most significant foreign investors in the paper packaging sector is Nine Dragons Paper Industries, which is owned by the private US company Chung Nam. Nine Dragons was founded in 1996 and is now China's largest manufacturer of corrugating medium and containerboard, using recovered paper from the United States (although it has also started using locally recovered paper). It has a huge recycled paper mill in Dongguan, Guangdong province, and a new fluting machine at its mill in Taicang City, near Shanghai, which should come on line very shortly, bringing its paperboard capacity to 2.9 million tons a year.

Many of the more long-established Western packaging producers have also entered China – not least because their global clients (including the electronics giants and fast moving consumer goods companies) have already moved there. SCA Packaging, for example, has 17 local manufacturing operations producing a wide range of packaging materials for companies like Motorola, Siemens, Electrolux and Phillips. Sonoco also has four paper tube plants in the greater Shanghai area and a fifth in Kaiping, southern China, while Amcor has an interest in two Chinese packaging plants and recently bought a minority stake in Vision Grande, a big Chinese tobacco packaging producer.

Similarly, International Paper, the world's biggest forest products company, has a consumer packaging subsidiary in Guangzhou City; a container packaging operation in Chengdu; and a beverage packaging business in Shanghai. In November 2004, it cemented its lead in the market for pasteurised milk containers by signing an agreement with Beijing Sanyuan Foods, which supplies 70% of the fresh milk consumed in Beijing.

Meanwhile, Tetra Pak, the world's largest packaging producer, has invested more than $200 million in China since it first established a presence there in 1972. China is now its biggest market, with sales of some $600 million in 2003, and even though the domestic competition is increasing, Tetra Pak is confident that the rapidly growing dairy sector will ensure demand for its products keeps rising.

DuPont, the US chemicals and materials giant, has likewise been trading in China for many years. It entered the country in 1984 and set up a wholly-owned subsidiary, DuPont China Holding Company, in Shenzhen four years later. DuPont Teijin Films – its joint venture with the Japanese Teijin and Foshan Plastics Group – is now one of the world's leading suppliers of plastic film. Toray Industries, Japan's foremost PET film manufacturer, also has two production facilities at Yihna Toray Polyester Film, its joint venture with Yihna Group, based in Jiangsu province.

Several foreign investors have proved equally successful in the Chinese metal packaging sector. Alcoa and Alcan, which control the majority of the world's market for both alumina and aluminium, are both well established in the region, as is Rexam, the British consumer packaging group. Alcoa has nine wholly-owned and joint-venture companies making a wide range of fasteners, foil and industrial products. Its Qinhuangdao location is now the biggest foil producer and exporter in China. Alcan has another seven Chinese packaging operations, as well as a significant stake in a massive smelter complex in Ningxia. And Rexam has four factories, including a beverage can plant near Guangzhou in southern China.

Any company that wants to trade in China will need to take account of the social and economic traits of the local populace, but the market potential is substantial.

The Rewards of Doing Business in China

Many of the global leaders in the paper and packaging industry have thus entered the Chinese market already, and it has much to appeal to international manufacturers. With 1.3 billion consumers, some of whom enjoy a degree of prosperity their parents could never have envisaged, demand for paper, paper products and plastic packaging, in particular, seems virtually insatiable. Clearly, any company that wants to trade in China will need to take account of the social and economic characteristics of the local populace – and tailor its marketing and pricing strategies accordingly. But the market potential is substantial.

Moreover, although China is striving hard to modernise and expand its domestic facilities, the government knows that it will not be able to satisfy this demand alone. In its eagerness to attract foreign investors into the sector, Beijing has introduced a number of favourable tax policies and other investment incentives. Foreign-invested enterprises engaged in manufacturing activities are eligible to receive a two-year tax holiday and pay only half the standard 33% corporation tax for up to three years, starting from the date at which they report cumulative tax profits. These incentives should end in 2007, under the terms for national treatment laid down by the World Trade Organisation (WTO), which China joined in November 2001. But it is possible that companies which already receive such benefits will continue to enjoy them after the official expiry date.

The government has also introduced some special incentives for foreign companies setting up in the western regions, particularly provinces like Ningxia, which is amongst the poorest in the country – although any manufacturer operating in the area faces more complex logistics, management and communications problems. And it has tackled several issues that have long deterred inward investment. It has, for example, gradually reduced the tariff on equipment for high-grade paper production from 30% to 17%. Similarly, it has recently relaxed the rules on raw materials sourcing and foreign exchange balancing. Foreign-invested enterprises are no longer required to give priority to the local market when they are purchasing raw materials, fuel and other supplies, or to balance their foreign exchange income and expenditure.

Furthermore, it is now very much easier to secure approval for a foreign-invested project than it was a few years ago. In March 2002, the NDRC devolved responsibility for assessing and approving paper-manufacturing investments to the provincial authorities. This has had the two-fold effect of greatly expediting the approvals process and improving the scope of the incentives offered to overseas companies. Many local governments have gone well beyond the central government's directives when offering development aid, in the form of tax breaks, financing and trade measures, to foreign firms.

In line with the commitments China made when it signed up to the WTO, it has also lifted the restrictions on distribution. Since December 2004, foreign companies have theoretically been free to import and distribute products to any part of the country, although it is not yet clear exactly how the new rules will be implemented. And in 2007 foreign financial institutions will be able to offer a full range of financial services within China, giving both local and foreign manufacturers more opportunities to expand.

These are not the only advantages of doing business in China. Any company that invests in afforestation and clean energy projects there may be able to earn carbon credits which it can offset against its emissions of carbon dioxide in the industrialised world. Under the Kyoto Protocol, which came into effect in February 2005, all developed countries that are signatories to the treaty must reduce their greenhouse gas emissions by at least 5% below 1990 levels in the period 2008 to 2012. As a developing country, China is not required to cut its carbon dioxide emissions during this phase, but it can participate in the carbon-trading market.

Labour costs are also very much lower in China than they are in the West. Chinese employees engaged in sorting recycled paper are typically paid about $3.40 a day, for example – and wages fall sharply, the further a plant is located from the developed coastal cities. US workers, by contrast, must be paid at least the minimum federal wage of $5.15 an hour. Thus the liberalisation of the Chinese market for paper and packaging has given foreign manufacturers access to a vast pool of potential consumers and cheap labour alike.

The Risks of Doing Business in China

However, doing business in China is not easy. For a start, the bottom end of the market is extremely competitive. Most of the domestic paper manufacturers have focused on the low and middle parts of the market, while foreign joint ventures have focused on high-quality products. But as local producers improve their grasp of new technologies, so the competition at the top end of the market will increase.

Moreover, the Chinese government has been actively subsidising the modernisation of some of the largest state-owned manufacturers (a move that partly counterbalances the special incentives available to foreign investors). According to a report published by the American Forestry and Paper Association last year, the Ministry of Finance supported the renovation of 21 state-owned pulp and paper enterprises with preferential tax rates and loans, loan interest subsidies and other forms of special funding worth $1.67 billion between 1998 and 2002.

When these projects are completed, they will increase China's paper production capacity by more than 1.7 million tons.

This is a relatively small rise in the context of the country's projected growth in demand for paper and paperboard. But experience in other industries shows that China has often invested in new plant on the back of short-term spikes in demand on a scale that outstrips any reasonable long-term forecasts. The result is crushing pressure on prices from the large, state-controlled manufacturers, which will produce and sell into markets without any margins, if necessary.

The Chinese regulatory system is also very complicated. The Vice Premier of Agriculture of China's State Council has ultimate responsibility for the paper and packaging sector, but below him are several key administrative ministries and government bodies, each with a different role. In addition to such central authorities, every province has a local government which is responsible for approving local fibre, wood and paper projects. However, the central and provincial authorities often pass bills and make judgments that contradict one another – as Oji Paper recently found to its cost, when it was informed that the central government would have to sign off its plans to construct a pulp and paper mill in Nantong, even though it had already obtained permission from the provincial authorities.

This is not the only way in which the central and local governments sometimes conflict. The central government wants to create a sustainable pulp and paper industry that relies on properly harvested plantations and behaves responsibly with regard to the environment. But China is a typical fast-growing market – and the provincial authorities are keen to maintain that growth, so environmental considerations sometimes rank lower on their list of priorities when they are deciding whether to approve new projects.

China's relatively young business culture and legal system is a source of other difficulties. Most Chinese business executives do not understand the importance of contracts and place far more emphasis on relationships, but certain events in China's experience of reform have left a legacy of ingrained distrust that makes it hard for foreigners to build such contacts. Furthermore, China's contemporary body of laws only dates back to 1979 and, like the country itself, the legal system is evolving fast. New laws are sometimes tested and then withdrawn for an overhaul, so the situation is very fluid.

Nowhere is this clearer than in China's attitude towards the protection of intellectual rights. After acceding to the WTO, China signed the TRIPS (trade-related aspects of intellectual property rights) Accord, under which it promised to uphold the international laws on intellectual property. But manufacturers in many sectors complain that it has not done nearly enough on this score, although it is now making efforts to improve the rule of law in commercial disputes.

Such cultural and legal concerns aside, any international paper or packaging company that sets up manufacturing facilities in China will need to plan its fibre supplies very carefully, since the country will be heavily dependent on imported pulp and waste paper for a good few years yet. It will also have to take several other costs into account. In July 2004, for example, the government introduced a new pollution fee; and in October 2004, it announced that it would apply a new water supply quota to China's seven most water-intensive industries, including paper manufacturing, with effect from 2005.

Any foreign paper producer investing in China will likewise need to bear in mind the difficulties of building a marketing and sales network, and transporting products over long distances on rough roads and congested railways. With a land mass of more than 9.3 million square kilometres, China is almost as large as the United States, but its infrastructure – particularly in the western regions – is still far less developed.

Lastly, all overseas investors in China (whatever sector they operate in) will have to manage the risks associated with its foreign exchange and capital controls. In July 2005, the central government responded to international market pressure to change its fixed currency system by reducing the exchange rate to 8.11 yuan to the dollar – from the 8.28 it had maintained for a decade. It also announced that it would let the yuan float daily within 0.3% of the combined value of a mixed basket of currencies, although it has not yet specified the weightings of the currencies in the basket. But these measures are so modest that they will certainly not dent China's burgeoning trade surplus with the rest of the world.

Moreover, Beijing still retains a considerable element of control over foreign exchange. The yuan is not freely convertible. Foreign investors can only repatriate profits if they fulfil certain conditions. And they can only repatriate capital if the companies in which they have invested are liquidated or the capital investment is reduced – and then, only with government approval. Exchange controls thus have a considerable bearing on many aspects of investment in China.

Concluding Thoughts

Multinational paper and packaging companies should exercise great care with their investments in China, particularly when they want to sell or develop proprietary products. Chinese goods are often much cheaper than those manufactured elsewhere. Chinese companies are also closing the technological gap – and they are likely to continue receiving protection in the form of non-tariff barriers for some years to come.

Foreign manufacturers will almost certainly be held to higher standards when it comes to environmental protection and the use of resources, for example. So not only will they be at a disadvantage in terms of fixed asset investment, they may have higher operating costs as well. Any foreign-invested company entering the market will therefore need to plan carefully to ensure its products are sufficiently differentiated by reference to market position, quality or brand to justify a premium in the marketplace. This will be a challenge for what are mainly commoditised products, and the challenge will increase as domestic producers improve their product quality. So, unless foreign manufacturers can find ways in which to build and maintain differentiated positions in the marketplace, or can obtain advantages in overall efficiencies in capital spend, production or supply chains versus domestic producers, they may find it tough to maintain revenue growth and margins.

However, China has considerable attractions, too. Twenty years of vibrant economic growth have given it a huge appetite for paper and packaging in all its forms; it has made considerable progress in modernising the legal, political and regulatory structures that are required to support any form of business; and the government is encouraging its largest companies to go global. The pursuit of viable outbound investments is promoting more innovative alliances with other multinationals and expanding the range of strategic options available to foreign investors seeking opportunities there. This rapidly changing landscape is one that bears careful watching.

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